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The OIL and GAS JOURNAL

PRODUCING REFINING ENGINEERING MARKETING

Published Every Thursday TULSA, OKLAHOMA, JULY 4, 192[illegible] $6.00 a Year

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STOP

EVAPORATION LOSSES With

YOU do not permit losses of such magnitude to go unchecked in any other phase of your operations. Why allow evaporation to continue robbing you? You can't alter Nature's law, but you can so control conditions as to stop the loss. Cover all tanks with Wiggins Roofs. The Floater is best adapted for working tanks and the Breather for standing storage. Ask for full description and quotations for either old or new tanks.

A WIGGINS FLOATING ROOF

OR

A WIGGINS BREATHER

CHICAGO BRIDGE AND IRON WORKS

CHICAGO, ILLINOIS

OGJ 7-4 Gray

Advertisers' Index on Page 33 Table of Contents on Page 34

TRAIN LOADS
OR CAR LOAD LOTS
But only one high standard of manufacture, including selection of timber, seasoning, framing and a service that has never failed to meet construction requirements.
International Poles last in service. We back up every claim we make—we say they will do only what they have already done. International has thousands of poles in service 20-25-30 years which are still in an excellent state of preservation. The past experience of hundreds of International Pole users definitely prove this.
When you purchase International Poles you are investing in a pole whose durability is a scientific fact. Continuity of electric power supply and communicating service, so essential to the efficient and economical production, refining and pipe line operations, demand a proved strong pole line foundation.
Prompt shipment of highest quality creosoted pine poles can be made from our large supply of poles ready for immediate framing. Specially framed poles in quantity can be furnished on short notice.
Estimates of costs on poles or any pole schedule will be gladly supplied. Carload orders are given the same careful attention as trainload orders.
International Creosoting & Construction Co.
General Offices—Galveston, Texas
Plants: Texarkana Beaumont Galveston
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International
Creosoted Yellow Pine Poles

GENUINE

WALWORTH
MASTER STILLSON

STILLSON

With the new red handle and the same old trademark

The Walworth Master Stillson with steel or wood handles in 6, 8, 10 and 14 inch sizes and with steel handles only in 18, 24, 36 and 48 inch sizes.

You can pick out a genuine Walworth Master Stillson from a whole pile of others by its bright red handle.

You can further satisfy yourself that it's the real thing by the little old diamond with the word STILLSON drop forged on the top jaw.

And when your men get to working with it, they will quickly sense its greater strength in the way its harder teeth and heat-toughened jaw and bar stand up under the strain of doing the day's work.

WALWORTH

Walworth Company, General Sales Offices: 51 East 42nd St., New York
Plants at Boston, Mass.; Kewanee, Ill.; Greensburg, Pa., and Attalla, Ala.

Distributors in Principal Cities of the World
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Walworth International Co., New York, Foreign Representative

The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription price $6.00 a year; 15 cents a copy. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Okla., under the Act of March 3, 1879.

Gypsy Oil uses Strong traps . . .

ONE of the most important jobs assigned to Strong gasoline traps in the oil field is their frequent use in draining accumulators. A trouble-free, highly efficient trap is required that will need no attention. And here is such an installation in the Mission Flowing Plant of the Gypsy Oil Company, in the Seminole.

First cost is not of immediate importance in selecting such equipment. Strong traps purchased on actual capacities are the most economical to buy, and their use based upon uninterrupted service makes them most economical to operate. This has always been easily proved.

On steam lines or in this special service, a Strong trap cannot become air-bound. It cannot wire-draw. The *ANUM-METL* seat and disc is guaranteed to stay tight for one year from installation, regardless of pressure or temperature.

BULLETIN 100-A, the Refinery and Gasoline Plant Catalog, fully describing Strong gasoline traps and other Strong Specialties, will be sent on request.

STRONG CARLISLE & HAMMOND

For the gasoline plant and refinery there are Strong Anti-Freeze Relief Valves, Atomizing or Blending Valves, Cushion Non-Return Valves for compressor and field lines, Gas Engine Stops,

Gasoline and Steam Separators, Mineral Seal Oil Traps, Separating Traps, Vacuum Traps, Lifting Traps, Steam Traps, and combination Vacuum-Pressure Relief Valves.

MANUFACTURERS OF STRONG SPECIALTIES — CLEVELAND, OHIO

THE profitable operation of a pipe threading machine involves more than low tool cost alone.

It is true that low tool cost plus high production will give a low operating cost—but to be profitable, the pipe machine must produce work that can be *profitably* used.

The Landis Pipe Threading Machine is designed to produce threads that will meet A.P.I. Specifications to the last detail—for length, taper and finish. And it is built to give this same superior performance for years.

Landis cut threads can be used profitably — and they can be produced profitably because the Landis has a lower chaser cost and will give a higher production.

Tell us of your threading requirements. We will gladly show you where you can save money by using Landis.

LANDIS MACHINE COMPANY, INC.

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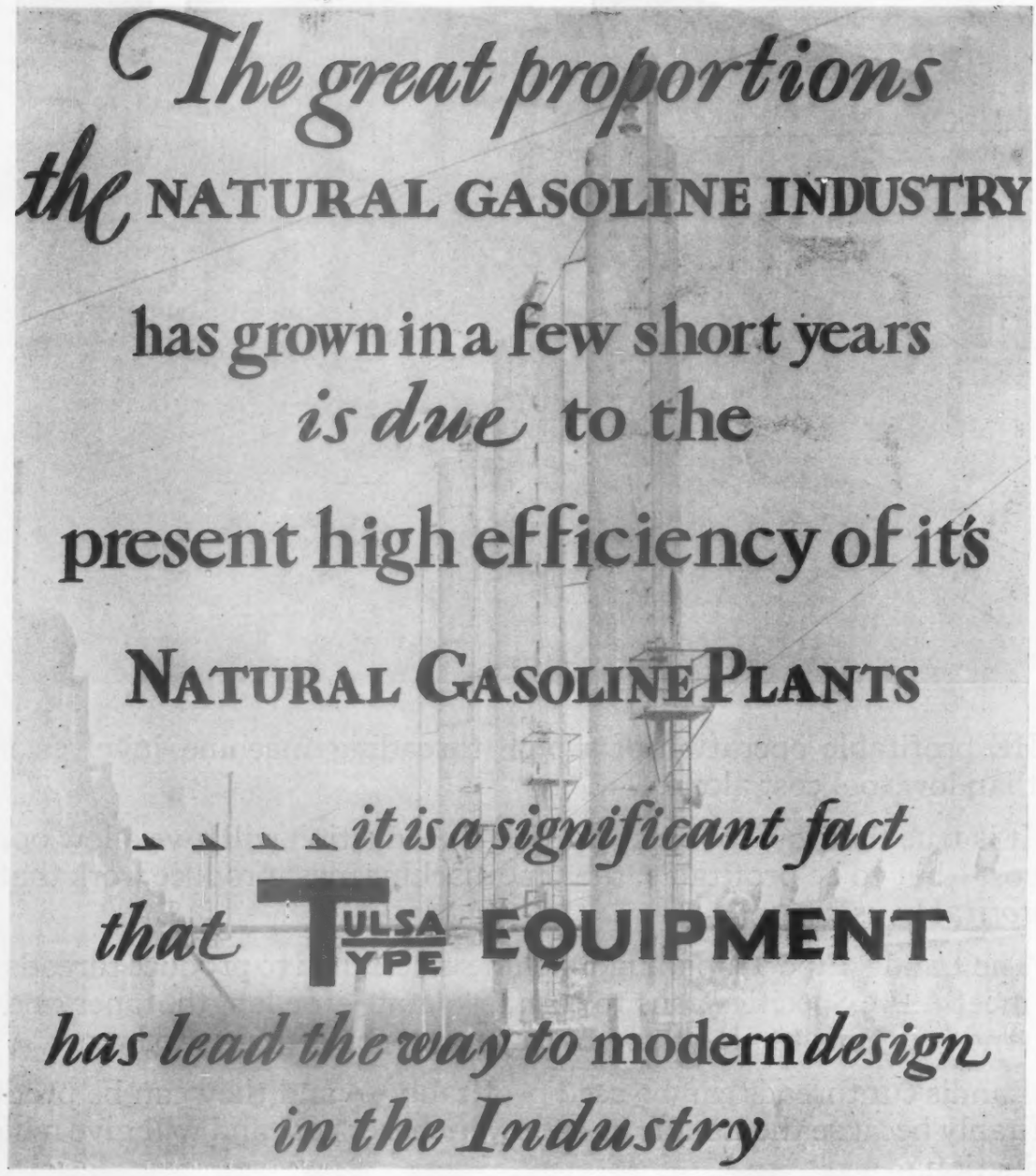
The great proportions
the NATURAL GASOLINE INDUSTRY
has grown in a few short years
is due to the
present high efficiency of it's
NATURAL GASOLINE PLANTS
it is a significant fact
that TULSA TYPE EQUIPMENT
has lead the way to modern design
in the Industry

TULSA
Boiler & Machinery Co.
TULSA OKLAHOMA

McCord LUBRICATORS

STANDARD OF THE OIL FIELD

There is no denying the best recommendation any product can offer is the approval of its users. More McCord force feed lubricators are in use in the oil fields, giving satisfactory service than all other makes combined.

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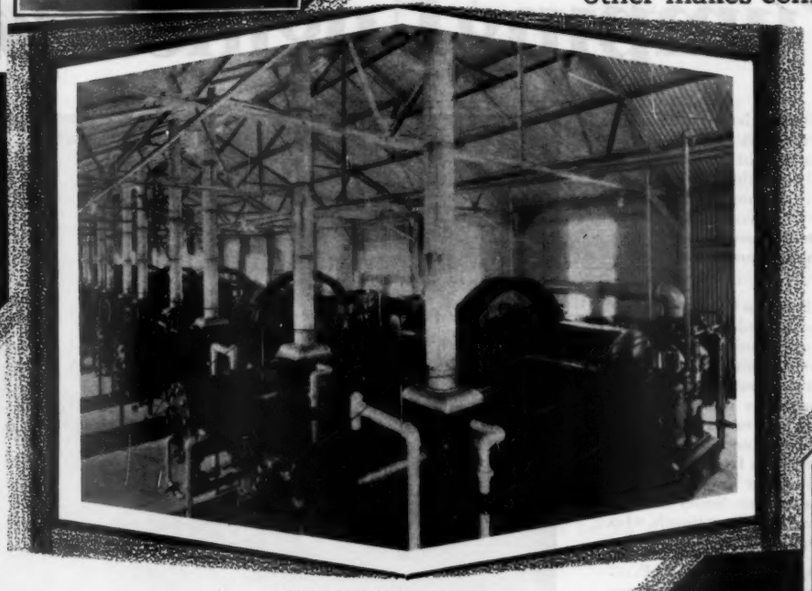
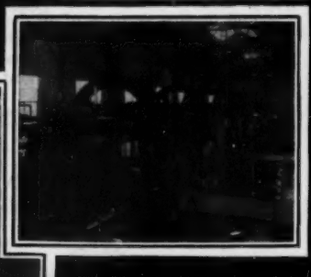
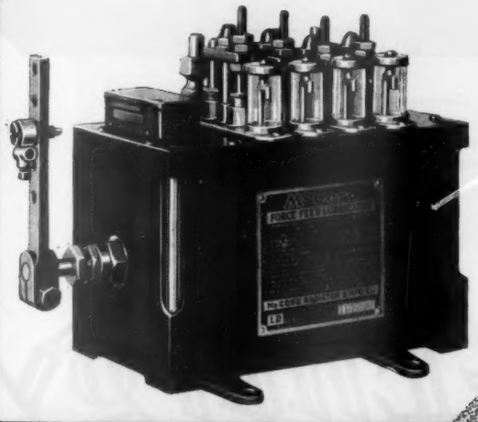
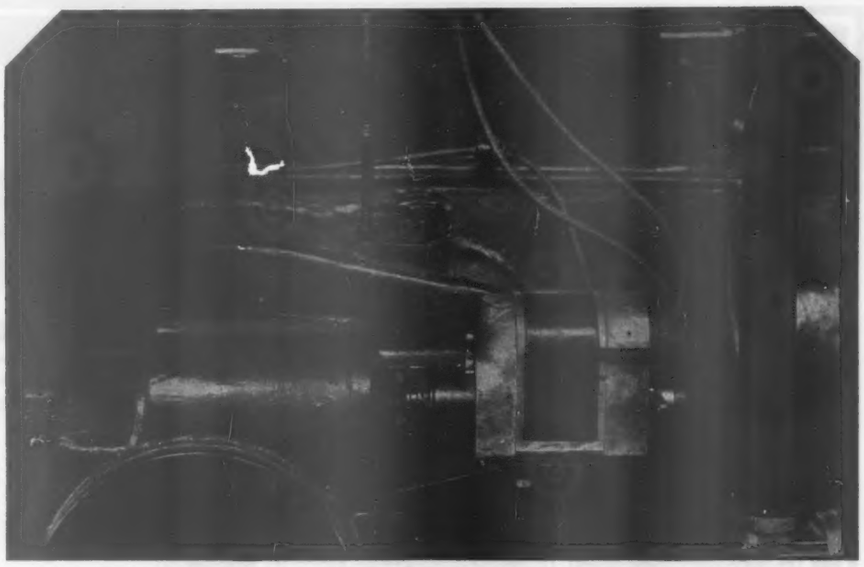


21—165 H.P. Units—
McCord Equipped





McCord Radiator & Mfg. Co.
LUBRICATOR DIVISION
Detroit, Mich.



How the large important oil companies

Keep Pumping Engines *Pumping!*

A PECULIAR condition exists in the pumping plants at the oil fields. Nowhere else perhaps is equipment put to such tests of endurance and reliability as the 24 hour, day-in and day-out service in a pumping plant. Nowhere else do shut-downs involve the heavy losses suggested by the phrase "a barrel lost is lost forever," a phrase familiar to every oil man.

No wonder then that the Super-Energy Magneto has been so widely adopted in the oil field. For this magneto not only gives the extra power that its name promises. Every detail of design eliminates a source of ignition trouble. Thus it is absolutely dustproof and waterproof. Its ball bearings never require lubrication. Its rugged one-piece aluminum frame prevents ball bearings from becoming loose. Which suggests only a few of the developments which make the Super-Energy Magneto the masterpiece of Robert Bosch, who founded the magneto industry over 40 years ago.

For the giant gas engine of 1000 B.H.P.... for the smaller higher speed stationary engines of 15 B.H.P.... for other smaller engines down to the smallest single cylinder engine, there a suitable type of Super-Energy Magneto, just as there is for trucks, tractors, stationary and marine engines of all descriptions. Write for a copy of "Ignition Briefly Described," containing ignition information which you will find both interesting and useful.

Only Robert Bosch Super-Energy Magnetos are Original-Bosch Magnetos. For your protection look for the full name "Robert Bosch" and trademark shown at right . .

ROBERT BOSCH MAGNETO CO., Inc.
3601E Queens Blvd., Long Island City, N. Y.

The upper photo shows a close-up of a Robert Bosch Super-Energy Magneto on an engine in a large oil plant. This type of Super-Energy Magneto is used on all of the engines in this plant, as shown in the lower photograph.

The Original Bosch
ROBERT BOSCH PRODUCTS

Super-Energy Magneto

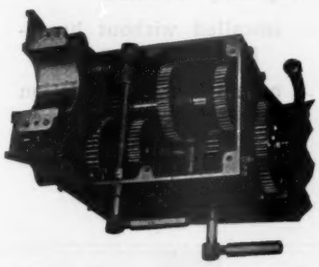
A Letter from Harry G. Nye

To the Oil Men of the U. S. A.

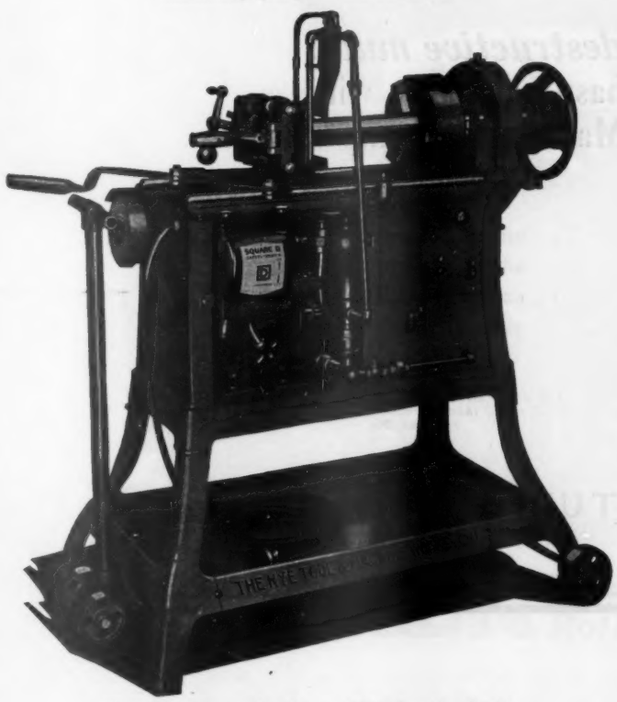
NYE POWER MACHINES

All Gear Driven—No Belts or Chains

Quick Opening Die Head With Trouble Proof Ring Type Dies. (No Chasers)



Gear Case running in oil assuring perfect lubrication.



No. 100, Capacity ¼ to 2 inches inclusive.
No. 200, Capacity ¼ to 2½ inches inclusive.

FRIENDS:

What has become of the old-fashioned preacher who used to preach these curse-of-gold sermons when we were boys? He made the village banker look like a bum, and the village bum like a banker. Making money was the work of the devil, and maybe the parson was right, because you certainly had to work like the devil to make it.

Well, I don't know what has become of the old-fashioned preacher, but I know where the new-fashioned preacher is. He's out at the country club playing pasture pool with his broker, or he's attending the weekly meeting of the Eatfast Club, and joining the gang in caroling the fact that Old Macdonald had a farm, e-i, e-i, o.

For the world has about decided that making money is not such a terrible crime, if a man makes it honestly, which is the easiest way to make it there is. The world thinks more of a sinner who pays his debts than of some psalm-singer who is behind with his rent. Money may be a sin, but standing off the creditor is no virtue.

I know a lot of men who have made money, bankers, and movie actors, and prize-fighters, and a few men who have made a lot of money, most of them waiters, and I never knew a man yet who was making it for himself. He was working like the dickens so his kids would never have to work at all. A fool idea, but give him credit for it.

Most men want to live, that when their summons comes to join the innumerable caravan, the check from the trust company will keep right on coming every month just the same. If you don't think there is a lot of unselfishness in the world, consider the amount of life insurance that is carried.

And if I should ever even remotely suggest that an order for pipe-tools would help right now, I hope you will not think I mean help me. I'm thinking about the factory payroll and the family bank-roll. And then think how it will help *you*—Nye Tools work so much faster and easier and make so much money for the man who buys them.

Not hinting or anything,

HARRY G. NYE.

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HARRY G. NYE
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Universal Shaft operating stocks up to 12 inches.

MANUFACTURED BY

THE NYE TOOL & MACHINE WORKS
4120-4130 Fullerton Avenue
CHICAGO, ILL.

EVERY MINUTE OF EVERY HOUR

MacCLATCHIE
PIPE-TECTOS

—will safeguard your drill pipe

. . . absolutely guaranteed to stay in place under normal conditions

. . . will wear longer, as the rubber is unexpanded

. . . easily removed when pipe is laid down — 100% salvage value

"RUBBER protectors with the grip of STEEL"

MacCLATCHIE
PIPE-TECTOS

—will speed up your drilling

. . . all rubber bearing surface

. . . quickly installed

. . . installed without breaking a tool joint

. . . no special installation tools to be lost between jobs

a bigger squeeze..
without a slip—the MacClatchie geared brake

. . . doubles the lever pressure

. . . compounded 2 to 1 against the "kick"

. . . heavier steel bands

. . . greater braking surface

. . . easily adjusted

The MacClatchie Geared brake is easily installed on any rotary draw-works drum.

destructive mud..
hasn't a chance with MacClatchie pump valves

. . . made of heat-treated alloys of finest quality

. . . one-piece construction

. . . adjustable washers

. . . precise workmanship

. . . years of record-breaking service to their credit

There are more MacClatchie Mud Pump Valves sold than any other make. Quality is responsible

MacCLATCHIE MANUFACTURING COMPANY
COMPTON - - - - - - - - - - CALIFORNIA

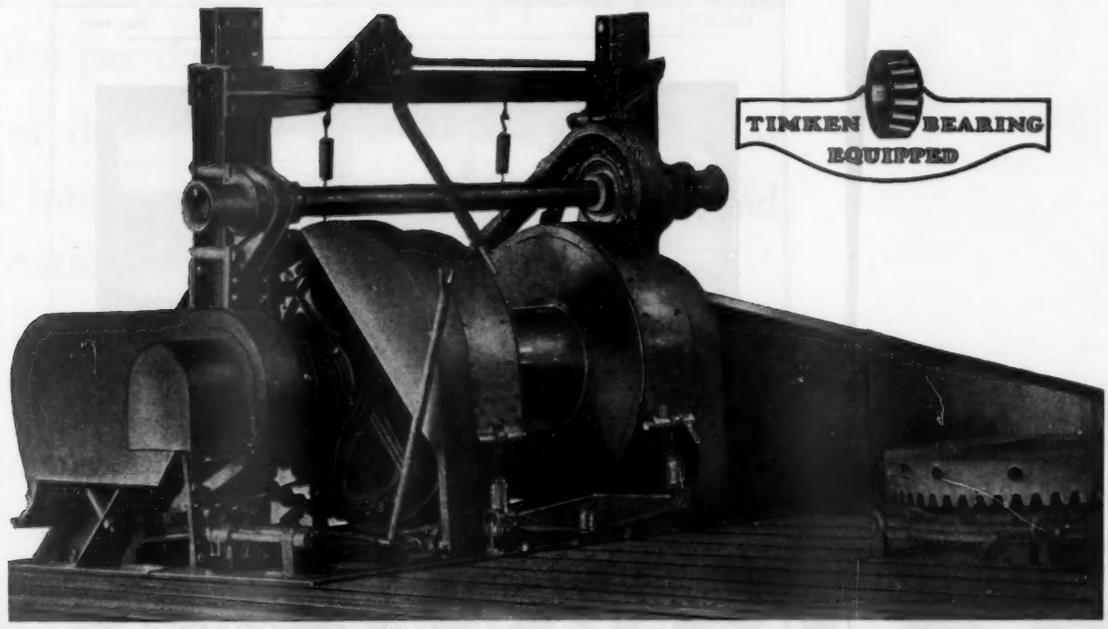
Lucey Features Timken Economies

When Lucey Products Corporation announced a new 3-speed Horizontal Drawworks a great deal of mechanical description was summed up by saying "drum and line shafts are mounted on Timken Bearings".

Almost any producer knows from experience that this can mean only one thing—the most satisfactory operating economy due to Timken rigidity and Timken friction elimination.

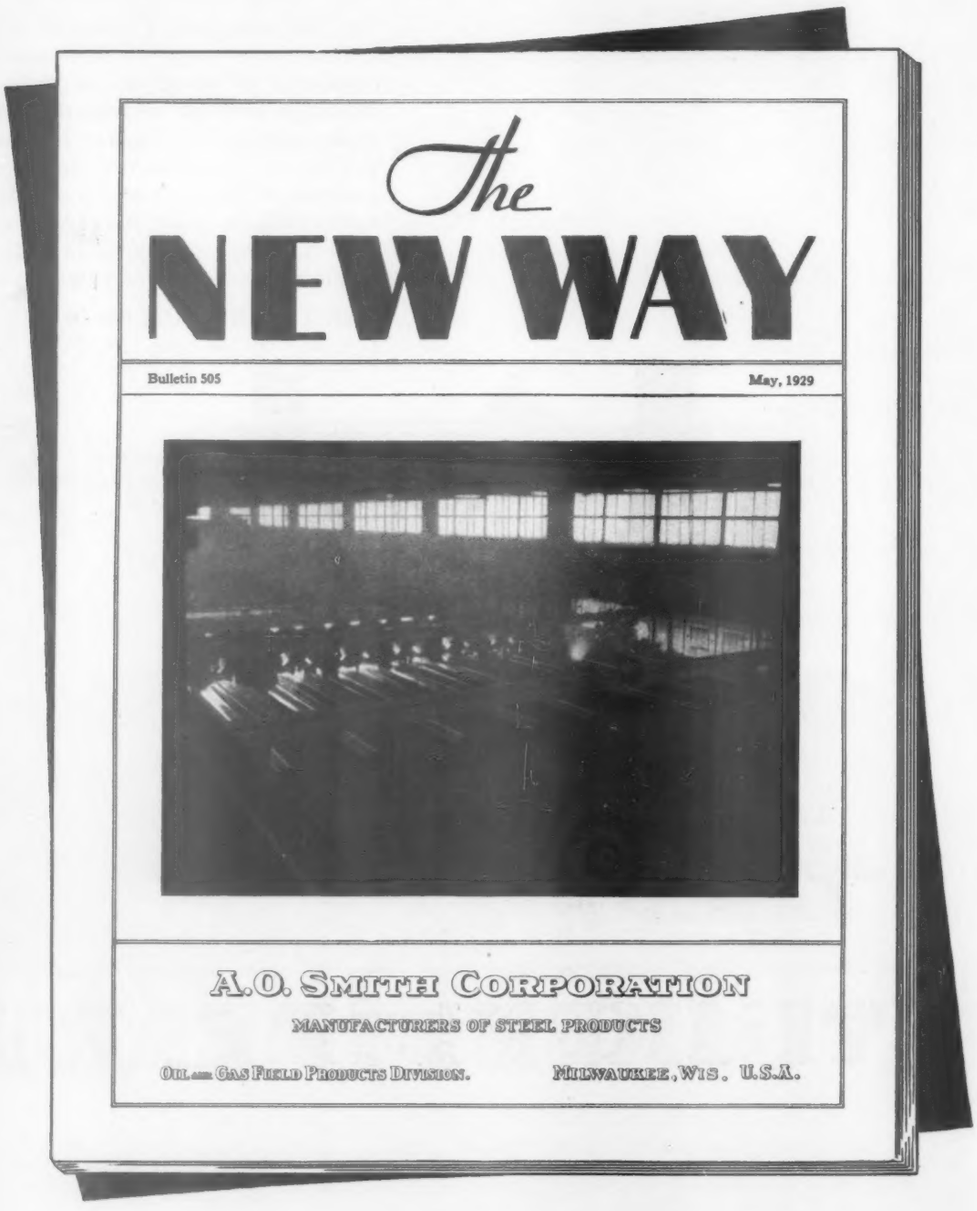
The fact that more Timken Bearings are used in the oil fields than all other anti-friction types combined is based on another fact—Timken Bearings provide increased output and continuous operation. Timken Bearings do all bearing jobs well because the exclusive Timken combination of Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS* and Timken-made steel supplies capacity for radial *and* thrust *and* resultant loads—wherever wheels and shafts turn.

THE TIMKEN ROLLER BEARING COMPANY
C A N T O N , O H I O



TIMKEN *Tapered Roller* **BEARINGS**

The NEW


The
NEW WAY
Bulletin 505
May, 1929
A.O. SMITH CORPORATION
MANUFACTURERS OF STEEL PRODUCTS
OIL AND GAS FIELD PRODUCTS DIVISION.
MILWAUKEE, WIS. U.S.A.

WAY

—is the title of a new book.

In it are stated the facts of a manufacturing organization entering an established field with a product made in a new way—and in two years becoming the leading figure in that field.

This is the story of superior line pipe at the rate of 25 miles per day.

A copy of this book should be in the hands of everyone interested in Oil and Gas Underground Transportation.

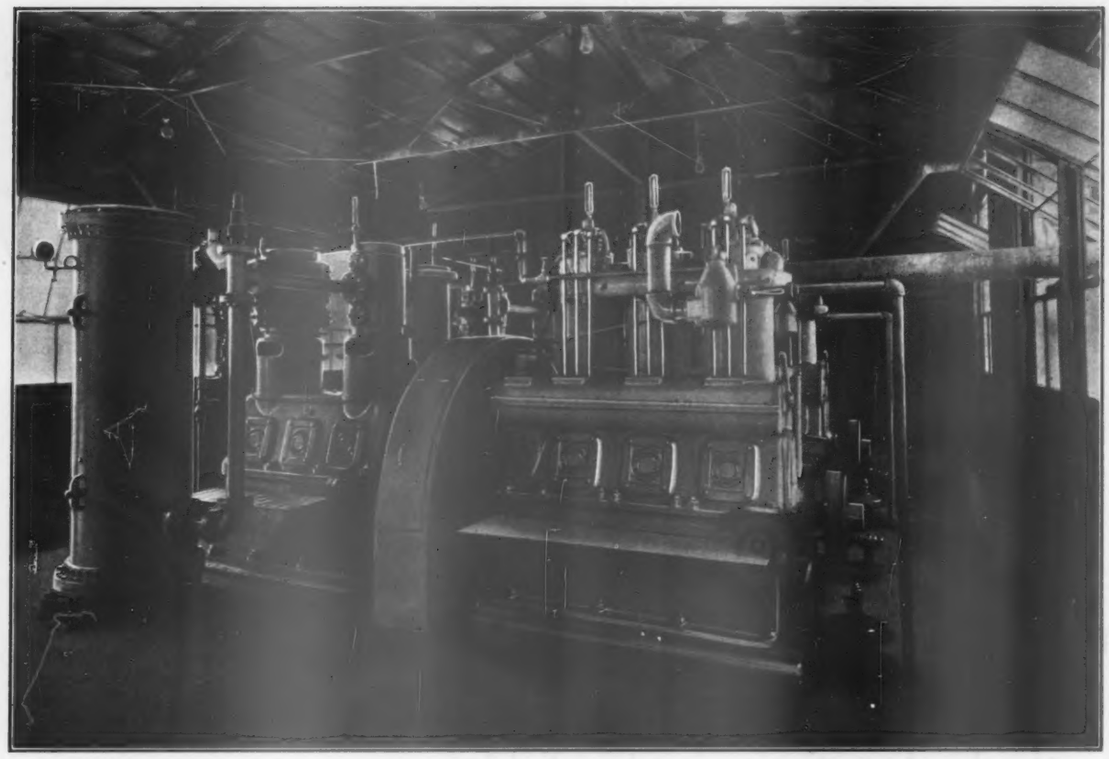
A. O. SMITH CORPORATION

Oil and Gas Field Products Division

General Offices: MILWAUKEE, WISCONSIN

District offices at: New York · Tulsa · Houston · Los Angeles

SMITH*WELDED*
LINE PIPE



An installation of two CP duplex two-stage vertical compressors, each direct-connected to a CP gas engine. Vacuum Oil Co., Lake Charles, La.

CP direct-connected oil or gas engine driven compressors provide an exceptionally compact compressed air or gas plant that cannot be excelled in EONOMY, RELIABILITY and SMOOTHNESS of OPERATION. Capacities in this type compressor range from 423 to 3000 cubic feet per minute; pressures from 10 to 1000 pounds per square inch. Send for illustrated descriptive bulletin.

Chicago Pneumatic Tool Co.

6 East 44th Street, NEW YORK, N. Y.

Sales and Service Branches all over the World

Whealton & Townsend Co., Inc., *Authorized Distributors*

417 South Hill St., Los Angeles
1502 Magnolia Bldg., Dallas

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CHICAGO PNEUMATIC

COMPRESSORS

Supreme in its class

For Steam, Water, Air, Oil, Gas and Gasoline

LUNKENHEIMER "KING-CLIP" GATE VALVES

(PATENT PENDING)

(TRADE MARK REG. IN U. S. AND FOREIGN COUNTRIES)

Iron Body Bronze Mounted
All Iron

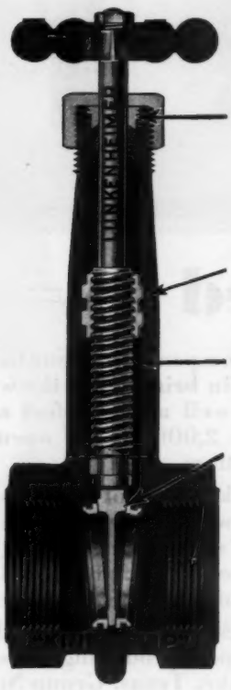
Inside Screw
Outside Screw and Yoke
Quick Operating

Screw Ends
¼ to 2 in. inclusive
150 lb. Working Steam Pressure
225 lb. Gas or Liquid Pressure

Also made with Screw Ends 2½ to 4 in. inclusive and with Flange Ends 1½ to 4 in. inclusive for 125 lb. W. S. P. and 175 lb. G. L. P.

Flange End Valves—face to face dimensions conform to standard trade practice.

All patterns of Lunkenheimer "King-clip" Gate Valves are illustrated and described in Booklet No. 504. A copy will be sent upon request. Lunkenheimer Distributors are prepared to furnish "King-clip" Gate Valves.



Gland in stuffing box sizes 1 inch and larger

Iron bonnet with bronze threaded bushing providing non-corrosive contact with stem.

Bronze stem. Rugged wear-resisting threads. Full contact with bronze bushing in bonnet with valve open or closed. Repacking shoulder—valve may be repacked under pressure when wide open.

Bronze double-faced disc, sharply tapered, will handle heavily impregnated fluids. Horseshoe band strengthens connection with stem.

Iron Body with bronze seat rings rigidly secured. Extra long pipe threads accommodate both American (Brigg's) Standard and A. P. I. line pipe.

Fig. 1640
Iron Body Bronze Mounted

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
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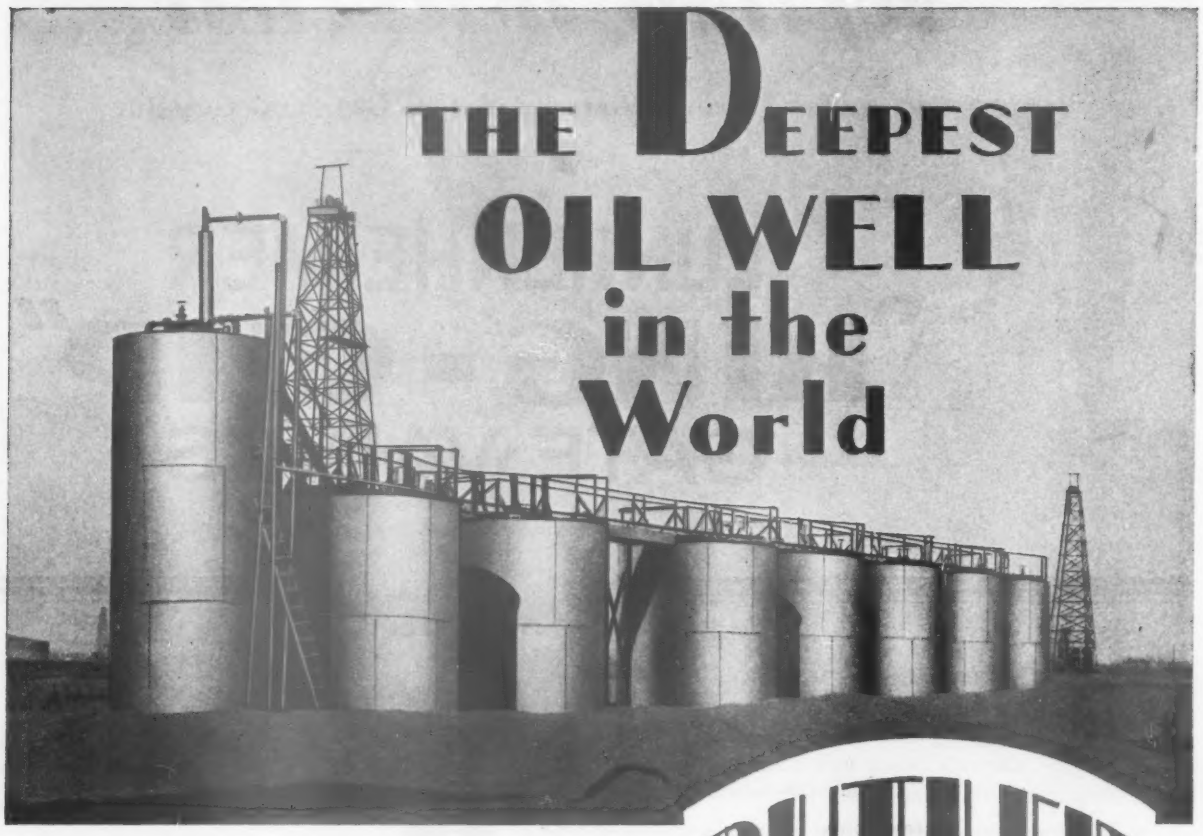
LUNKENHEIMER VALVES

5-53-91



Is Served by

BUTLER BOLTED TANKS

The Texon Oil Company surmounted tremendous obstacles in bringing in the world's deepest producing well at 8525 feet and in preserving it while 2,000 feet of open hole remained at the bottom.

The problem of tankage was of little moment, because they knew where to turn for fast and reliable field tank service and bolted steel tanks which can be depended upon in the emergency and through long, everyday service.

The Butler Bolted Steel Tanks pictured here are serving the deepest producing oil well in the world at Big Lake, Texas. Group No. 1 of Texon Oil Company.

Butler Bolted Steel Tanks are made in sizes up to 10,000 barrels. Butler welded tanks are made to any specifications.

BUTLER MANUFACTURING CO.
KANSAS CITY, MO. MINNEAPOLIS, MINN.

In addition to its long established standards of Bolted Tank construction, The Butler Manufacturing Company announces production of Bolted Steel Tanks conforming with dimentional standards—A. P. I. first edition. Butler A. P. I. specification Bolted Steel Tanks will carry the official monogram reproduced here:

This, and the Butler monogram, is a double pledge of the utmost value in Bolted Steel Tanks.

These reliable dealers are ready to render speedy Butler Bolted Tank Service:

Drane-Humphrey Co., at San Angelo, Big Lake, Pyote and McCamey, Texas; and Roswell, New Mexico.

Keyes-Butler Tank Co., of Casper and Cody, Wyoming.

Drane Tank Co., at Tulsa, Holdenville, Seminole, Hallett and Shawnee, Oklahoma; El Dorado, Madison, Wichita and Valley Center, Kansas.

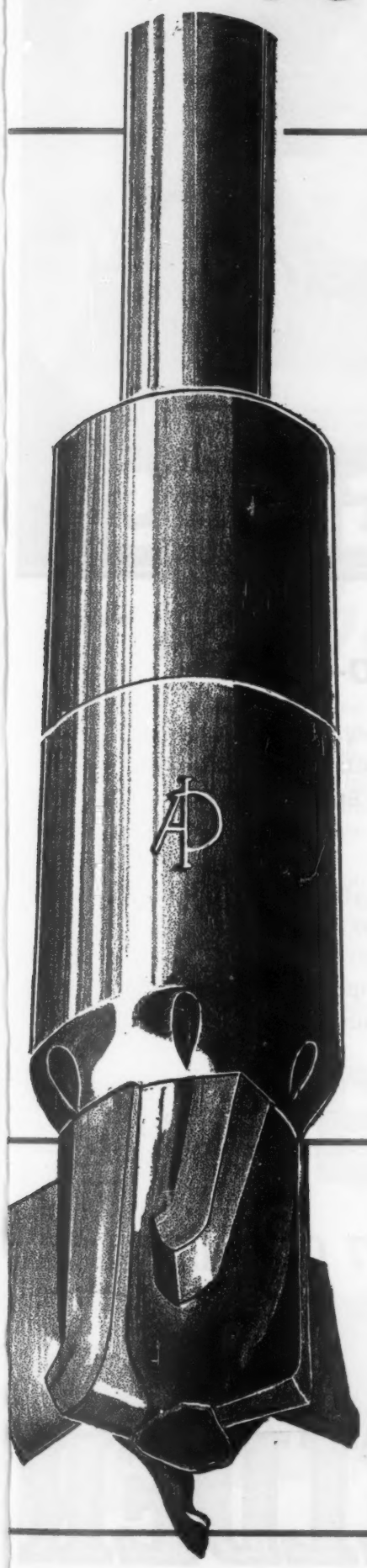
Muskegon Boiler Wks., Muskegon, Mich.

Gulf Coast Tank Company, 1907 Kipling Street, Houston, Texas, V. P. Hughes, Prop.

Thomas Moran, at Oil City, Shreveport and Georgetown, Louisiana.

M. A. Trimmer, at Blackwell and Lovell, Oklahoma.

80% of the major companies use the PERFECTION Core Barrel



YES, more than 80% of the major companies, drilling contractors and independent operators have bought Perfection Core Barrels within the last several months.

They have found that the Perfection's exclusive features such as the Split Liner; the way it stays clean until it reaches bottom, regardless of bridges, etc., cannot be duplicated in any other core drill.

It has been proven that our Perfection Core Bit set with diamond substitute will cut more hole in less time than any rock bit and at less expense.

Such popularity with those who know must be deserved. Our illustrated catalog will tell you in detail why the Perfection Core Barrel is approved by more than 80% of the major companies of the Mid-Continent field and hundreds of others elsewhere. No obligation. Send for it today.

Ask about other Brewster A. P. I. Products; Shouldered Tool Joints; Drill Collars; Fish Tail and Special Gumbo Bits; Special Rock Bits.

The Brewster COMPANY~INC.
SUCCESSORS TO OIL CITY IRON WORKS INC.
Shreveport, Louisiana

DISTRIBUTORS: Continental Supply Co., All stores; Wilson Supply Co., Houston and Beaumont, Texas; Hercules Supply Co., Dallas, Texas; T. T. Word Supply Co., Lake Charles, La.; Murray-Brooks Hardware Company, Lake Charles and Hackberry, La.
EXPORTERS: Continental Well Supply Co., 74 Trinity Place, New York City, N. Y.

"Here, Lad—

I'd like to give the job of building the new 10″ pipe line to the contractor who was just in here. But he wants to do it by arc welding. I told him I was strong for his old methods and hated to unbend for this newfangled method which might not make the grade."

The Lincoln
"Stable-Arc" Welder

—welds easier
—makes better welds
—permits greater output because of the steady uniform arc throughout entire welding range, which is the result of:
Variable voltage design
Laminated magnetic circuit
Separately-excited generator field
Double control of welding heat
All steel construction

No other welder has all these features.

"Easy, Pop—

It makes the grade *on high.* SPEED and STRENGTH is the middle and last name for an arc-welded line—'Stable-Arc' being the *first.*

And further it's miles ahead of a newfangled idea—about 2,500 miles ahead.

—That's the amount of pipe lines that have been constructed or are under way.

Arc welding has literally taken the industry by storm—and this storm has served to unbend every man—unless held erect by stiff bosom shirts or boils."

The Lincoln Electric Co., Dept. No. 26-7 Cleveland, Ohio

"Stable Arc"

W-87

LINCOLN WELDER

You can't blame your men

— if their hands are tied!

When your men "on the ground" ask for wrought iron tubing, make it available for them. They know that genuine wrought iron, such as BYERS, will show a service life from 100% to 500% greater than common tubing. They know that actual service records, made under severely corrosive conditions, demonstrate conclusively that BYERS TUBING resists corrosion and failure to a very high degree.

Don't blame your men if production is interrupted, due to premature pipe failures. Give them BYERS — and you will save money in the long run.

Established 1864 **A. M. BYERS COMPANY** Pittsburgh, Pa.

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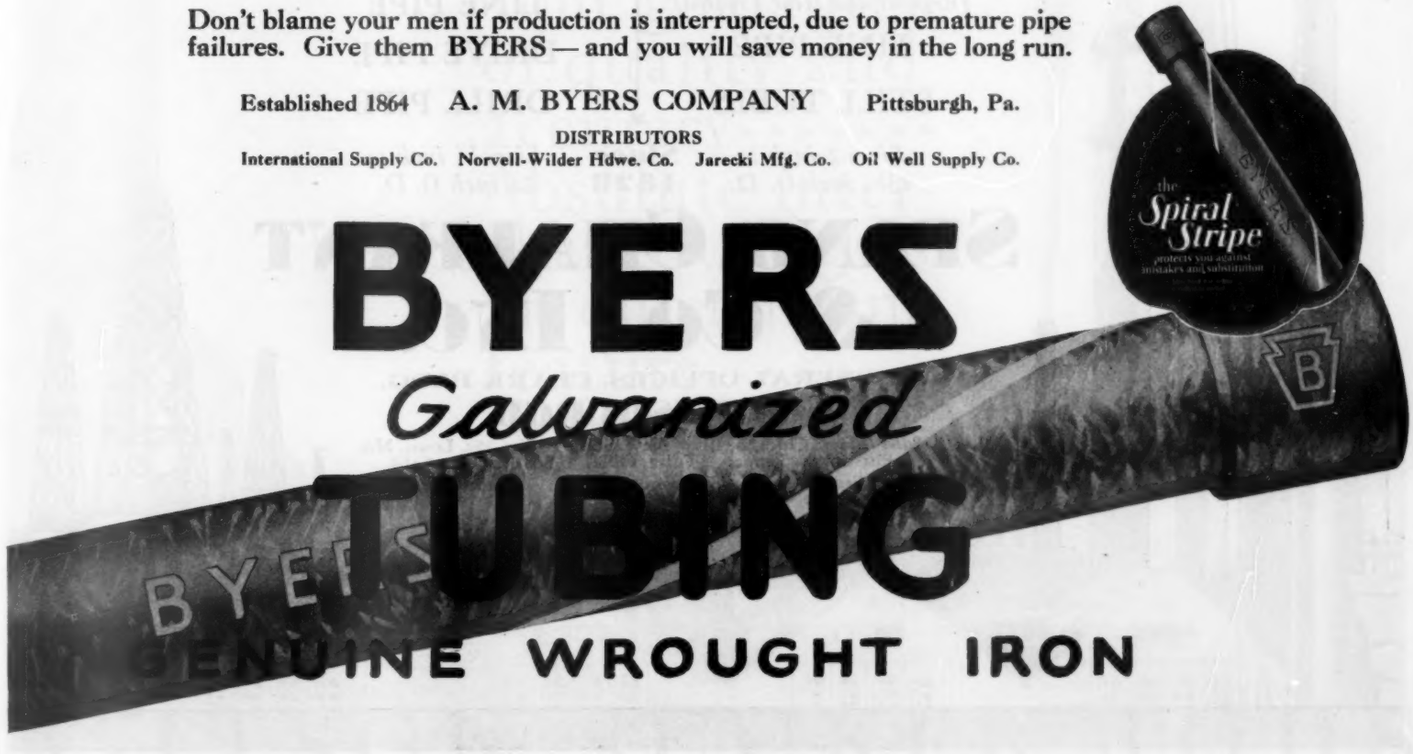
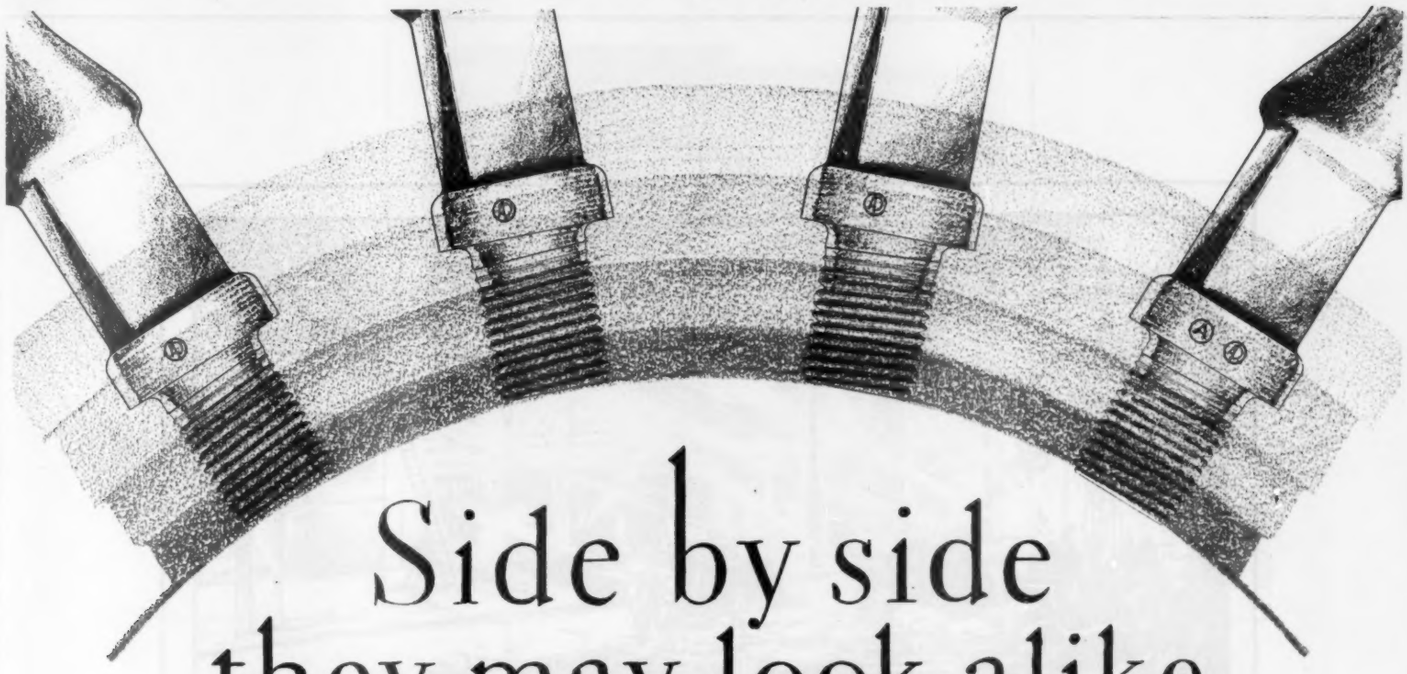


BYERS Galvanized TUBING

STANDARD
ETNA
Seamless
CASING
TUBING
DRILL PIPE
{Regular and Heat Treated}
LINE PIPE
STILL TUBES
Welded
CASING
STANDARD PIPE
LARGE O. D. PIPE
LINE PIPE
DRIVE PIPE
DRILL PIPE
Sizes 2 inch to 13⅜ inch O. D.
Since 1828
Sizes ⅛ inch to 24 inch O. D.
SPANG, CHALFANT & Co., INC.
GENERAL OFFICES, CLARK BLDG.
PITTSBURGH
Sales Offices: Chicago, Ill. New York, N. Y. St. Louis, Mo. Pittsburgh, Penna. Tulsa, Okla. Los Angeles, Calif.
Mills: Etna, Penna. Sharpsburg, Penna. Ambridge, Penna.



Side by side they may look alike but ONE is more *enduring*—

——Identified by the *Axelson* Ⓐ, Your guarantee of quality and accuracy. Absolute interchangeability is an outstanding feature

Axelson Machine Company

P. O. Box 337 Los Angeles

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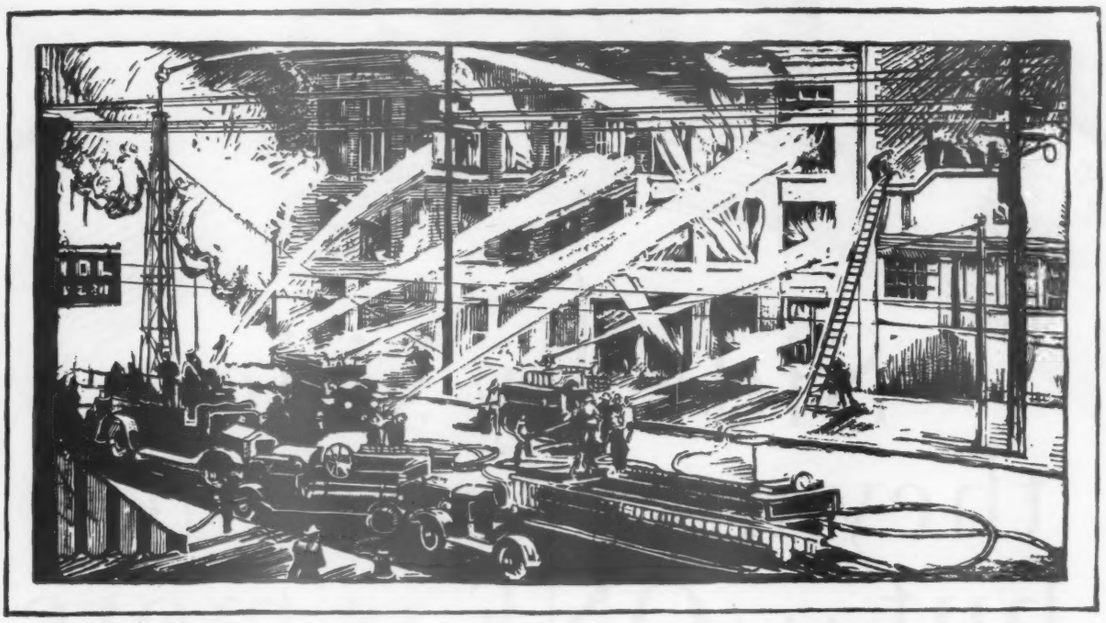
Mid-Continent and Eastern Distributors:

Frick-Reid Supply Corporation

THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY

Ⓐ

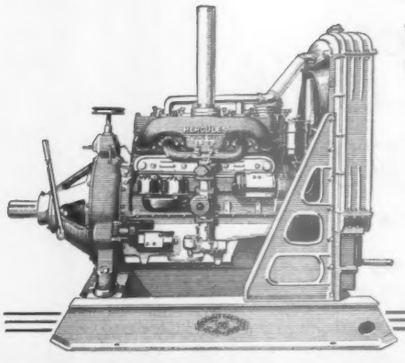
AXELSON SUCKER RODS



Pumping 500 gallons per minute *for* Fire Fighting streams

Fire-hose quickly connected to hydrant . . . the Hercules equipped Seagrave Suburbanite Pumper throbbing powerfully . . . and into the blazing building is poured a quenching flood of water at the rate of 500 gallons per minute!

In providing power for pumping high pressure fire fighting streams Hercules dependability is never more dramatically proved. In other fields, Hercules sets just as high a standard of performance—furnishing heavy-duty power for varied types of industrial and oil-producing machinery and automotive equipment.

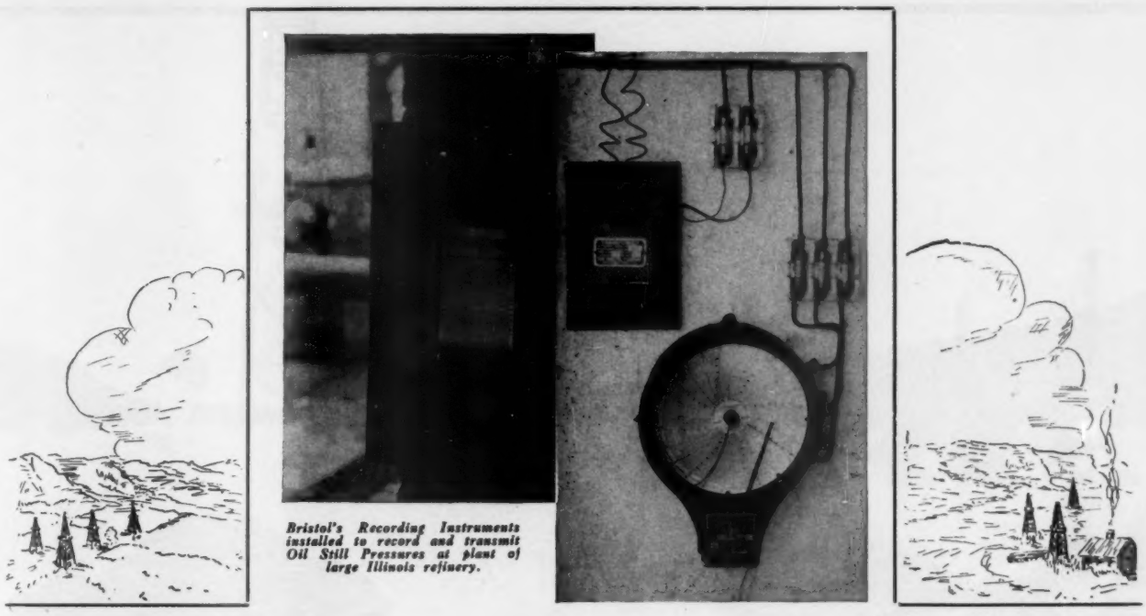


Well-known manufacturers of pumping outfits have standardized on Hercules.

HERCULES MOTORS CORPORATION
CANTON, OHIO, U. S. A.
West Coast Branch: Los Angeles, Cal.

THE CONTINENTAL SUPPLY COMPANY
ST. LOUIS, MISSOURI
Engine and Parts Distributor in the Mid-Continent Field

HERCULES ENGINES



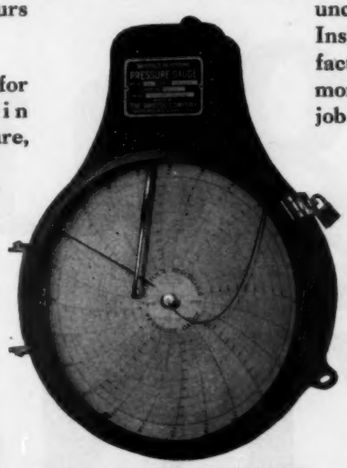
Bristol's Recording Instruments installed to record and transmit Oil Still Pressures at plant of large Illinois refinery.

Successful Refineries

Almost without exception utilize RECORDING INSTRUMENTS *and* AUTOMATIC CONTROL EQUIPMENT

Even a casual survey of present-day refinery equipment evidences a tendency toward "mechanization of processes," i.e., elimination of the human element, and substitution of Recorders and Automatic Control Equipment which is capable of precise, untiring operation at maximum production, 24 hours a day.

In refinery processes, for example, where certain conditions of temperature, pressure, etc., must be maintained, continuous chart records made by Bristol's Recording Thermometers, Pyrometers, Gauges, etc., guide workmen in holding all factors of operation uniformly correct. The result is closer initial cuts, fewer re-runs, and greater volume output, with generally improved quality.



Moisture-Proof Bristol's Recording Pressure Gauge. Can be furnished for installation at exposed locations outdoors such as stills, pipe lines, etc.; or in the plant where subjection to moisture, dust or fumes is unavoidable.

A Bristol Instrument for any Condition

The fact that each Bristol Instrument is made up to suit exact requirements of every installation insures doubly accurate service; simplicity of design, rugged construction further insure trouble-free operation and long life. In fact it's not uncommon to hear of Bristol's Instruments still giving satisfactory service after 10 to more than 30 years on the job.

Bristol's Line Very Extensive

The complete and varied list of Bristol's Instruments includes, Recording and Indicating Thermometers, Pyrometers, Gauges, Liquid Level Gauges, Psychrometers, Recording Voltmeters, Milli Voltmeters, Ammeters, Shunt Ammeters, Frequency Meters, Mechanical Motion Recorders, Electrical Operation Recorders, Tachometers, etc., etc.

Write for descriptive Catalogs, Bulletins and prices.

Sales Engineering Service Without Obligation

The BRISTOL Company

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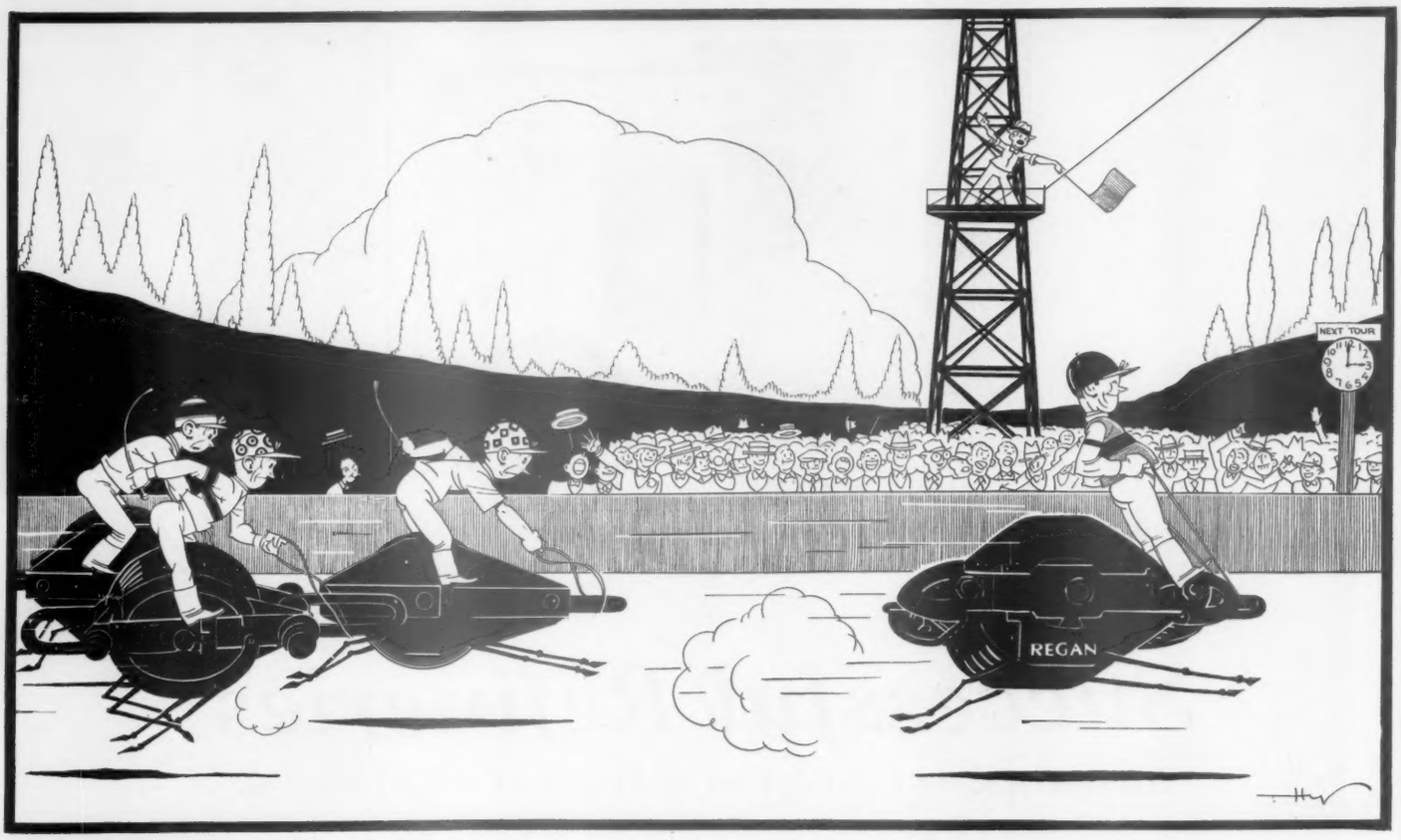

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the fastest Block in the field . . .

Patented

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Oil Field Equipment
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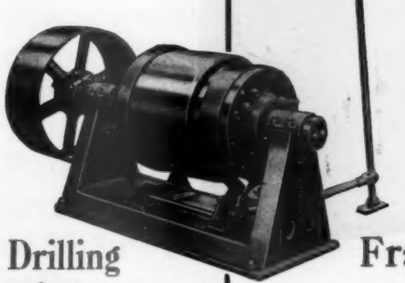
Franklin Valveless Oil and Gas Engines

Some of the Franklin OF Good Points

- Enclosed type
- Low fuel consumption
- 100% interchangeability
- Simplicity
- Piston rod is fitted with metallic packing which never needs adjusting or replacing
- Every spring exposed
- Complete simplicity with practically no adjustment
- In case of belt breakage engine automatically stops
- Fuel pump driven by eccentric running in oil bath
- Bearings are removable and reversible
- Only standard threads used. No special wrenches required
- Cylinder has 3 point, force feed lubrication
- Balance of lubrication is splash feed
- Pistons are air cooled
- All nuts subject to vibration are castillated and fastened with cotter pins
- Most economical to operate in fuel, lubricant, water and repairs
- Easy to start



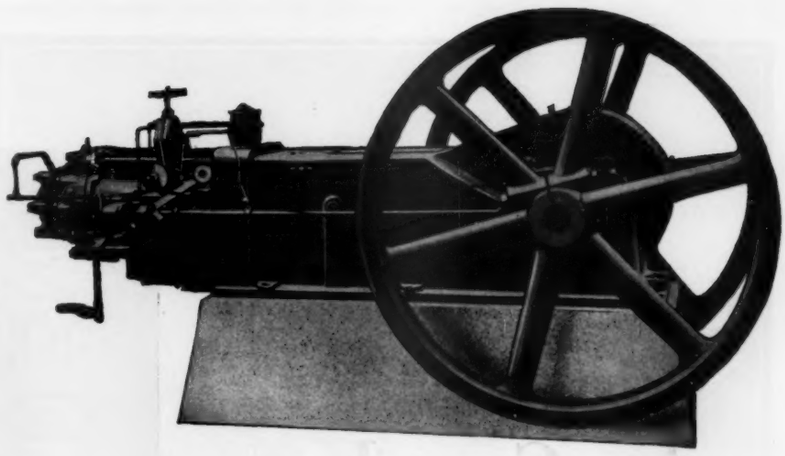
Type BG Clutch for Cable Tool Drilling or Pumping

A vast improvement over the former type of clutches.

Driven from pulley on engine. Permits the use of a larger diameter pulley and makes possible a slower clutch speed. Operates by hand lever on derrick.

Construction and design prevent Reverse Clutch Troubles.

PRICE—$1200.00 F.O.B. Franklin, Penna.



Here Is Practical Standardization

The new and improved Franklin Oil Engine, identified as type OF is made in three sizes: 12 x 16 (30 HP) and 13 x 16 (40 HP) and 16 x 16 (80 HP) for drilling, pumping and power.

ALL FRANKLIN VALVELESS 16″ STROKE ENGINES ARE INTERCHANGEABLE ON THE SAME BLOCK

After drilling the well, the operator can install one of the lighter units upon removal of the drilling engine. It fits the same block perfectly.

It is to the operator's interest to see that his drilling contractors use the Franklin since by doing so the cost of a new engine base is eliminated.

Here is practical standardization in which the benefits are mutual.

Send for literature.

Franklin Valveless Engine Company
Franklin, Penna.

PRICES

12 x 16 Type OF Franklin, including water circulating pump and pulley. *$1550 F.O.B. Franklin*

13 x 16 Type OF Franklin, including water circulating pump and pulley. *$2050 F.O.B. Franklin*

16 x 16 Type OF Franklin, including water circulating pump and pulley and air starting equipment. *$3200 F.O.B. Franklin*

NOTE—Type OF is readily converted into type OG for gas fuelization.

Distributed by

OIL WELL SUPPLY COMPANY

Branches in All Oil Fields

As Good as Good Steel can make it

The name "BETHLEHEM" is marked at intervals on every length of Bethlehem Steel Pipe—assurance that Bethlehem Pipe embodies the same high quality found in other Bethlehem Products.

One of the first requirements for making good pipe is good steel. The steel used in the manufacture of Bethlehem Steel Pipe is made under the supervision of skilled metallurgists, especially for this purpose.

The manufacture of Bethlehem Steel Pipe, from the mining of the ore, through the finishing operations, is controlled by one organization. Each step in the conversion of the steel into pipe is carried out under the supervision of men thoroughly experienced in pipe manufacture. The inspections and tests are most critical, so as to make certain that each length of pipe shipped conforms in every way to the Bethlehem standard.

When you purchase Bethlehem Steel Pipe, you are assured of pipe of uniform structure, and of high quality—pipe that will meet all requirements.

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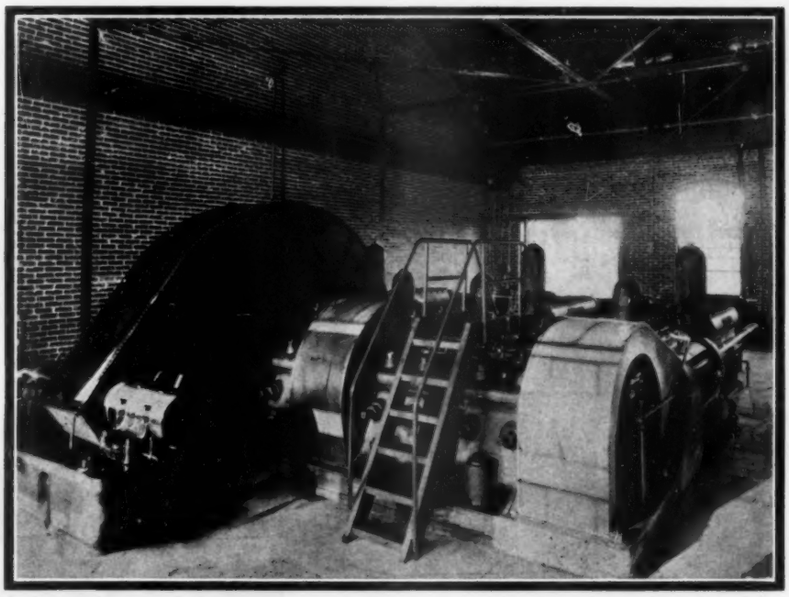
General Offices: BETHLEHEM, PA.

District Offices: New York, Boston, Philadelphia, Baltimore, Washington, Atlanta, Pittsburgh, Buffalo, Cleveland, Detroit, Cincinnati, Chicago, St. Louis, San Francisco, Los Angeles, Seattle, Portland, Honolulu

Bethlehem Steel Export Corp., 25 Broadway, New York City
Sole Exporters of our Commercial Products

BETHLEHEM STEEL PIPE

Bethlehem maintains at Los Angeles, Cal., and at Houston, Tex., well-assorted stocks of line pipe, ready for immediate shipment. Both threaded and coupled and plain-end pipe are included in these stocks.



A 40,000 barrel Prescott Menominee pump in the Council Hill Station of the Oklahoma Pipe Line Co. It is designed to operate against 900 lbs. working pressure.

No WORRYING with Prescott Menominee Pumps

YOU never have to worry about your oil pumping when Prescott Menominee pumps are on the job. They are designed and expertly built to give the dependable, consistent, trouble-free service needed and demanded for pipe line pumping. That's why you'll find so many users going out of their way to boost Prescott pumps.

Power costs are reduced to a minimum by these motor driven pumps. They operate with an overall efficiency of 80-86% over a wide range, and maintenance is practically zero.

Get the latest information on these pumps. Catalogs, performance data, etc., sent on request.

The Prescott Company
Menominee, Michigan, U. S. A.

Pumps for deep mines ~ Pumps for pipe lines

O&GJ 7-18 Gray

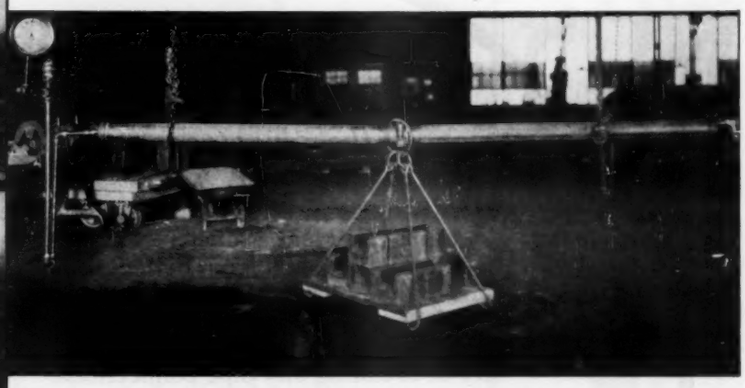
"A Steinway?" asks the guest; and the hostess glows with pride. "Halliburton Cementing?" asks the curious one; and the operator smiles his assent. No further discussion is necessary.

HALLIBURTON OIL WELL CEMENTING CO.
Duncan, Oklahoma

"FOR EVERY JOINT ON THE LINE"

3" gasoline line, Tonkawa, Oklahoma. Four men laid 160 lengths in 7 hours, using Victaulic Couplings.

VICTAULIC COUPLINGS



Victaulic Coupling supporting 980 pound load—under a hydrostatic pressure of 1000 lbs.

Two 12" gas gathering lines with Victaulic Couplings, St. Louis, Oklahoma.

SPEED, ease and economy of installation—and leak-proof joints at any pressure from vacuum to any pressure required—have made Victaulic Couplings standard oilfield equipment for crude oil, gas and water pipe lines.

Flexibility at every joint—every Victaulic Coupling an expansion joints for the pipe lengths it connects—absence of leaks when the line sags or is shifted under full load and working pressure—disconnection at any coupling without injury to coupling or pipe for cleaning the line, replacing a defective length or connecting a new line—elimination of joint—maintenance costs—these are some of the features that have earned the specification of Victaulic Couplings on oilfield and refinery lines, water, sewage, compressed air and gas lines and for a wide range of uses in process products manufacture.

Available in all sizes from ¾ inch up. For steel, wrought iron, spiral weld, and cast iron pipe—all pressures.

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All-purpose pipe couplings *"For every joint on the line"*

FLEXIBLE LEAK-PROOF
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PIPE COUPLINGS

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FOR CRUDE OIL, GAS, WATER, SEWAGE, COMPRESSED AIR, ETC.

Griscom-Russell

Heat Transfer Apparatus

Tube Bundles readily removable

—one of the advantages of G-R Apparatus

THE tubes in all Griscom-Russell Shell and Tube Heat Transfer Apparatus can be readily inspected from both ends, and all tube bundles can be easily withdrawn from the shell for cleaning and repair by simply removing the head cover without the necessity of breaking any pipe connections.

This important feature of readily removable tube bundles is only one of the many advantages of G-R Heat Transfer Apparatus. Some of the additional advantages of this equipment are their provisions against leakage, high rate of heat transfer, low pressure drop, exceptional compactness and high salvage value.

These advantages are described in detail in a recently published bulletin which will be sent on request.

The Griscom-Russell Co.
285 Madison Ave.,
New York

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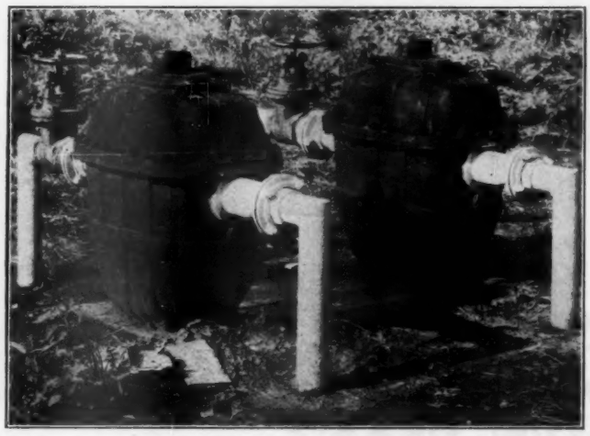
For Canada: Riley Engineering & Supply Co., Ltd., Toronto



Built for the Job They Do

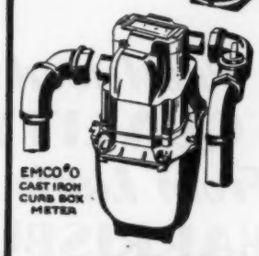
THESE two EMCO Number Four Large Capacity gas meters measure gas to the Pipe Line Department of a large gas company in Texas.

If it should become necessary to clean, adjust or repair the EMCO Number Four it can be done right in the line. Remove the cover plate and the entire assembly lifts out, and if desired, can be replaced by a spare assembly. All parts are interchangeable so that there is no delay when overhauling jobs are necessary.

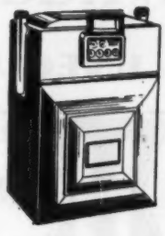
EMCO—*wherever you go*

EMCO #0 CAST IRON DRY GAS METER

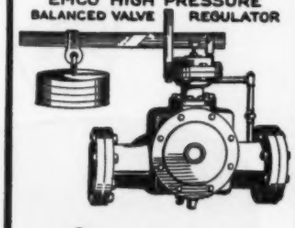
IRONCLAD CAST IRON DRY GAS METER



EMCO #0 CAST IRON CURB BOX METER

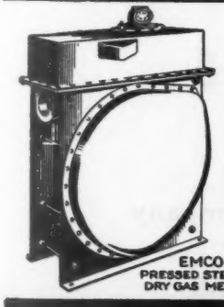


EMCO TIN METER



EMCO HIGH PRESSURE BALANCED VALVE REGULATOR

EMCO WATER HEATER AND GAS APPLIANCE REGULATOR



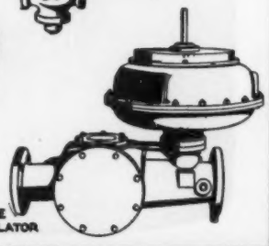
EMCO #5 PRESSED STEEL TYPE DRY GAS METER

WESTINGHOUSE FLUID POSITIVE GAS METER

EMCO LARGE CAPACITY CAST CASE DRY GAS METER WITH EMCO COMBINED RECORD GAUGE

EMCO ORIFICE GAS METER

EMCO DOMESTIC SERVICE REGULATOR



EMCO LOW PRESSURE BALANCED VALVE REGULATOR

PITTSBURGH EQUITABLE METER COMPANY

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Tested to 8000
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BULL PLUG
Tested to 6600
Lbs. Pressure

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BULL PLUG
Tested to 6100
Lbs. Pressure

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Tested to 5100 Lbs.
Pressure

Produced on a
QUALITY BASIS
From Ladle to Finishing Room in
HARRISBURG'S OWN PLANT

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STRENGTH
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Tested to 4300 Lbs.
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10" STD. BULL PLUG
Tested to 2800 Lbs. Pressure

12" STD. BULL PLUG
Tested to 2600 Lbs. Pressure

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Fully Equipped with Our Own Open Hearth Furnaces, Rolling Mills and Forge Shops

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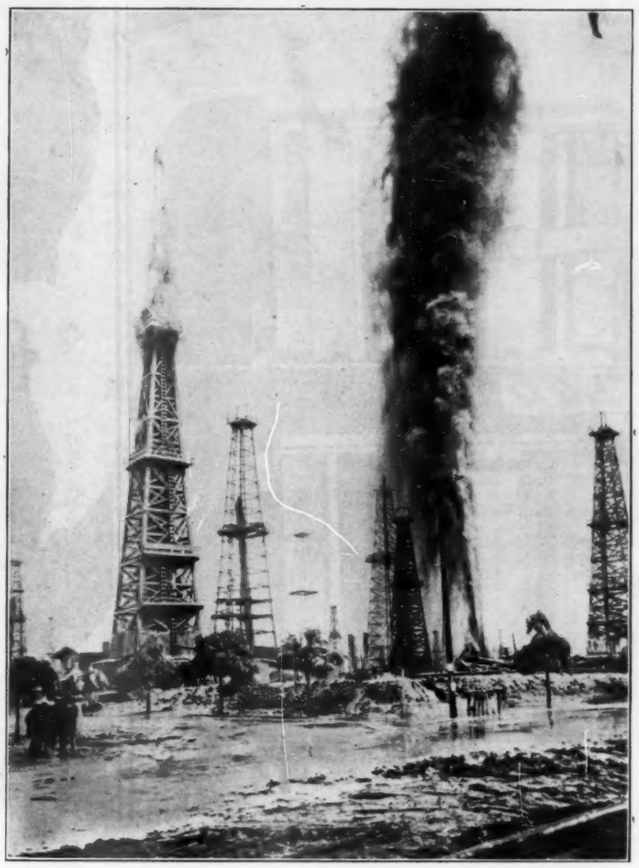
HARRISBURG

Forged Seamless Steel Bull Plugs



The Accepted Standard... Red-Lead Paint for Steel

FOR more than 100 years, pure red-lead has demonstrated its high efficiency as a protective paint for metal. It is the universal standard . . . the preferred paint for rust-proofing iron and steel.

A century of constant use has shown that pure red-lead paint gives a tough, rust-preventing film that is unexcelled in protective value—unsurpassed in length of life.

Fine, uniform, highly oxidized . . . there is no better red-lead obtainable than Dutch Boy red-lead. It comes in two forms—paste and liquid. The liquid (ready for the brush) is supplied in six colors—natural orange-red, light and dark brown, light and dark green, and black. The paste comes in natural orange-red and can be shaded to dark colors.

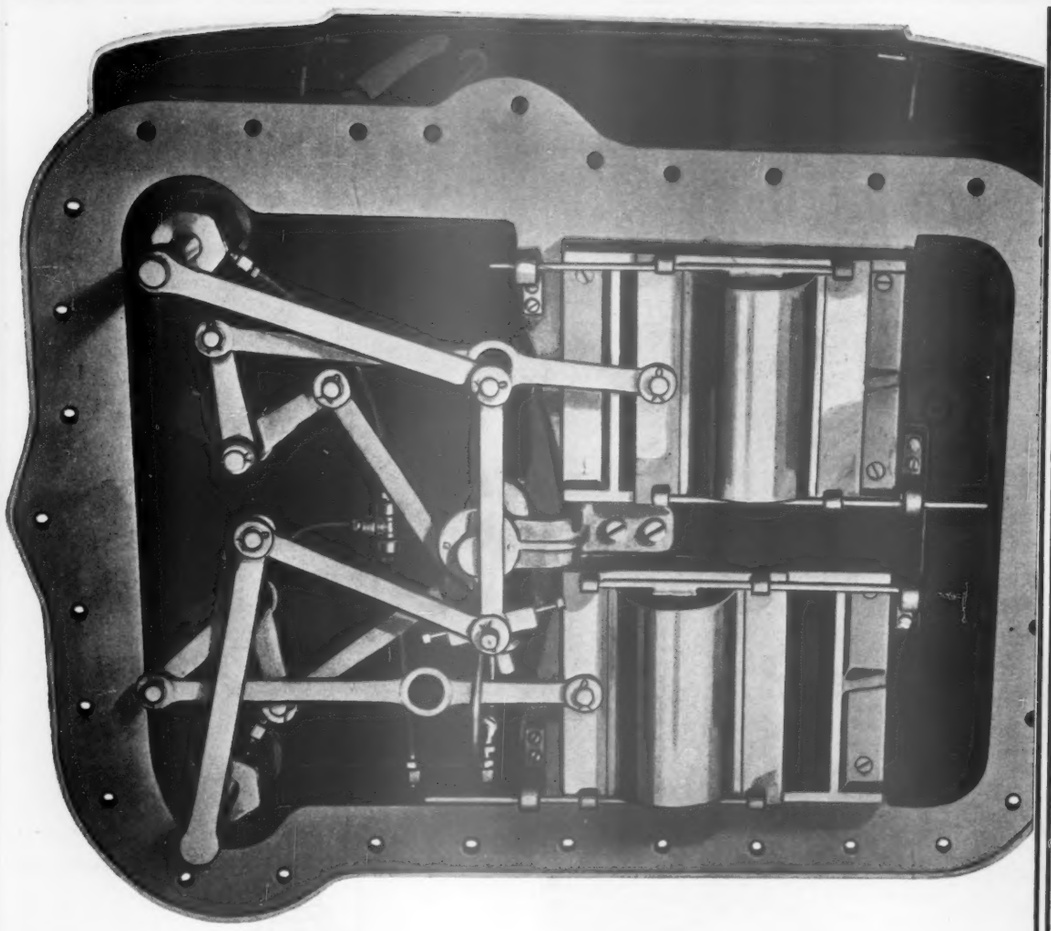
NATIONAL LEAD COMPANY

New York, 111 Broadway • Buffalo, 116 Oak Street • Chicago, 900 West 18th Street • Cincinnati, 659 Freeman Avenue • Cleveland, 820 West Superior Avenue • St. Louis, 722 Chestnut Street • San Francisco, 235 Montgomery Street • Boston, National-Boston Lead Co., 800 Albany Street • Pittsburgh, National Lead & Oil Co. of Pa., 316 Fourth Avenue • Philadelphia, John T. Lewis & Bros. Co., Widener Building.

LITHARGE of correct physical character and extreme chemical purity is a necessity in oil-refining. Such litharge is made by us. You can always rely on its unvarying uniformity. Our nearest warehouse can give you quick shipment.

DUTCH BOY

RED-LEAD



These valves work years longer
—because of advanced construction

In the three sizes of Ironcase meters (500 B, 250 B and 80 B) most popular for services requiring large capacities, the valve movement has been developed to its most advanced stage.

Their weight has been reduced more than 50%. Naturally the less weight, the less friction, hence slower wear and much longer life.

In eliminating friction by reducing the weight, other advantages are secured. Squeaks, for instance, are not to be heard in these meters. The valve movement is a much easier job for the valve links and for the flag and crank assemblies.

With effort reduced to a minimum, the causes of wear and tear practically disappear. The result has been demonstrated now for five years. Without exception, uninterrupted and most satisfactory operation has been secured by this feature of progress for which the Metric research staff deserves full credit.

The larger Ironcase sizes have other distinguishing features. Just to name them furnishes an imposing number of reasons that explain the success of these meters. Here they are:

- Less weight for their capacity
- Smaller space required for installation
- Longer valve links
- Lighter weight valve covers
- Better wearing valves
- Corrosion-proof cases
- Diaphragm drains
- Timken Bearings
- Alemite (non-stop) lubrication system

METRIC METAL WORKS
of the American Meter Company, Inc.
-ERIE-PENNSYLVANIA-U-S-A-

IRON-METRIC METERS-CASE

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Refinery Section Starts on Page 158

No Immediate Relief from Big Output

Highest daily average estimated total production in 1928, week ended Dec. 29, 2,585,844 bbls. Lowest in 1928, May 19, 2,338,241 bbls.

Oklahoma on Upward Trend with Oklahoma City Chief Factor. Enforcement Date of California Law Extended

By Andrew M. Rowley

Highest daily average estimated light oil production in 1928, week ended Dec. 29, 2,158,134 bbls. Lowest in 1928, Mar. 3, 1,927,713 bbls.

A glance at the production graph below shows instantly the reason for the weakness in the crude oil market and indirectly the cause of the same condition in the gasoline market. Running most of this vast crude oil production through the refineries has softened the market for gasoline as withdrawals from storage are less than had been expected even though consumption has shown a big increase over last year.

Crude oil production in the United States last week averaged 196,119 barrels a day more than it did six weeks ago. And, every indication points to still further increases in output. It must be kept in mind also this enormous gain in production has come on top of a period of overproduction which has been experienced during all of this year so far. There has not been a time this year but what crude oil production has been above last year's peak.

With all restrictions on production removed in California and a decision announced that no effort will be made until August 31 to enforce the new natural gas conservation measure, little relief from the overproduction condition can be expected from the Pacific Coast until fall at the earliest. Oklahoma has started another rise in the production column as a result of the development in the Oklahoma City Pool and operations in the Sasakwa area south of Seminole. That State was producing approximately 720,000 barrels on Tuesday of this week, a gain of more than 22,000 barrels daily over last week's average. With a number of wells scheduled for early completion in the Oklahoma City Pool, it is felt that area will show a substantial gain in output in the near future.

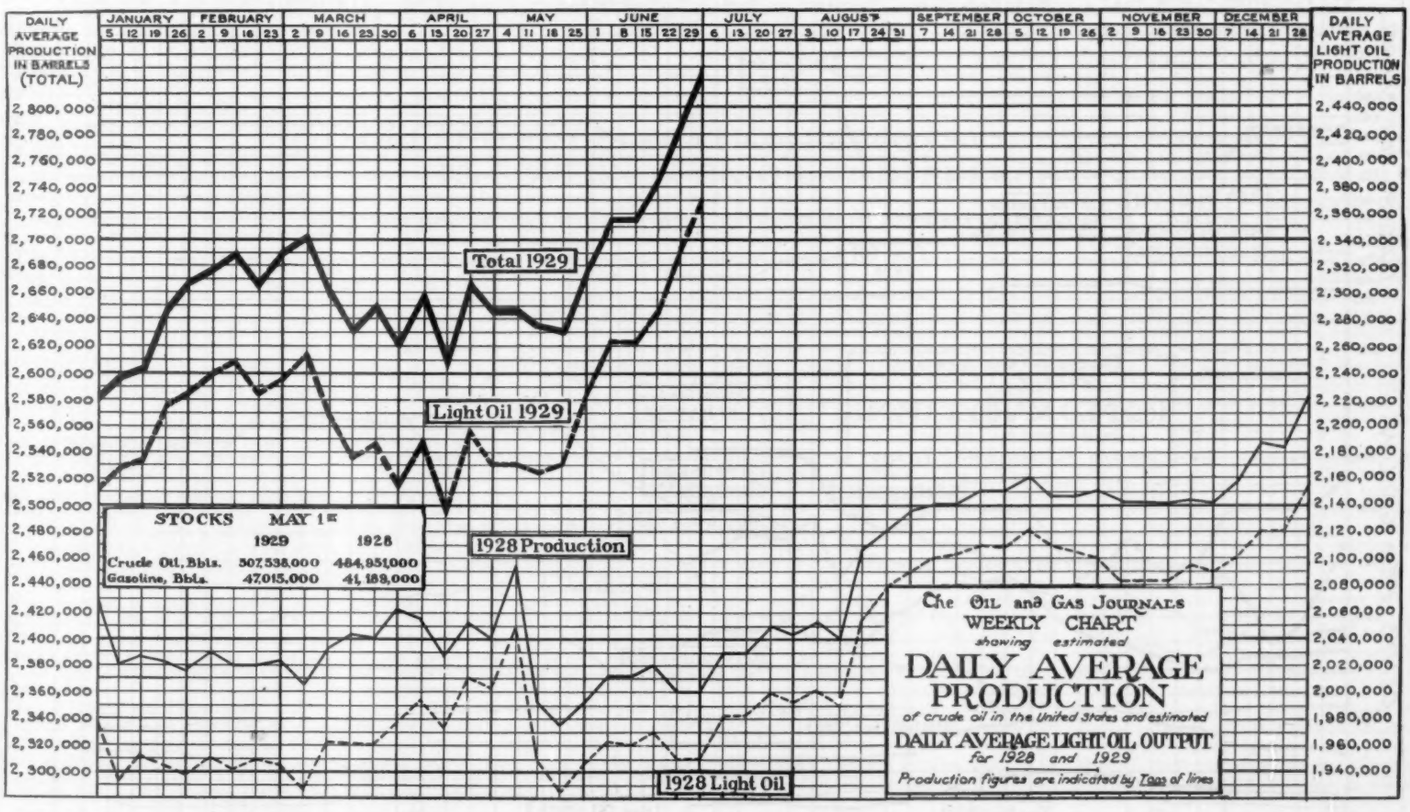
Crude oil is still being withdrawn from storage in the Mid-Continent area but how long this condition will continue depends upon the quantity of production obtained from the Oklahoma City and Sasakwa areas in Oklahoma. Talk of another increase in the crude oil price schedule has ceased and operators will consider themselves fortunate if the present schedule can be maintained.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended June 29 and a comparison with the previous week follows:

	June 29		June 22	
	Light	Heavy	Light	Heavy
Oklahoma—				
Tonkawa	9,985	.....	9,880	.....
Oklahoma City	9,810	.....	3,195	.....
Burbank	19,695	.....	19,730	.....
Other Osage Fields	26,540	.....	26,355	.....
St. Louis-Pearson	82,505	.....	89,815	.....
Cushing and Shamrock	18,530	.....	18,735	.....
Bristow	18,710	.....	18,820	.....
Allen	24,170	.....	23,385	.....
Seminole	298,845	.....	283,690	.....
Northern Miscellaneous	133,540	.....	130,790	.....
Southern Fields	55,085	.....	54,760	.....
Total Oklahoma	697,415	.....	679,155	.....
West Texas—				
Hendricks	142,247	.....	143,807	.....
Yates	110,100	.....	105,282	.....
Remainder	119,340	.....	120,208	.....
Total West Texas	371,687	.....	369,297	.....
North Louisiana	29,515	5,880	30,060	5,920
Arkansas	21,160	48,400	21,265	48,560
North Central Texas	138,362	.....	137,308	.....
Texas Panhandle	88,700	.....	91,010	.....
East Central Texas	19,045	.....	19,220	.....
Kansas	121,735	.....	121,210	.....
Total Mid-Continent Area	1,487,619	54,280	1,468,525	54,480
Gulf Coast	.....	154,459	.....	154,105
Southwest Texas	.....	79,046	.....	79,274
Eastern	117,000	.....	116,000	.....
Rocky Mountain Area	73,568	.....	70,245	.....
California—				
Santa Fe Springs	257,000	.....	250,000	.....
Long Beach	176,500	.....	175,000	.....
Huntington Beach	42,000	.....	43,000	.....
Elwood	29,750	.....	26,500	.....
Inglewood	15,000	8,500	15,000	9,000
Ventura Avenue	60,500	.....	60,000	.....
Seal Beach	52,000	.....	48,000	.....
Remainder of State	61,000	160,000	61,000	160,000
Total California	693,750	168,500	678,500	169,000
Total United States	2,371,937	456,285	2,333,270	456,859
Grand Total	2,828,222		2,790,129	

Total Increase, 38,093 Bbls.; Light Oil Increase, 38,667 Bbls.



Oklahoma Market Fails to Improve

Expected Large Purchases of Gasoline Yet to Materialize. Kerosene Prices Lower. Cylinder Stocks Strong

By C. O. Willson

The general weakness in the Oklahoma (Group 3) market which was apparent over the greater part of June continued during the past week. The weakness centered in gasoline but other products except cylinder stocks were not active.

July which is one of the two largest gasoline consuming months of the year, opened without any positive indications that the trend toward lower prices would be stopped. The supply continues to exceed the demand and in several cases not only in Oklahoma but in other parts of the Mid-Continent area, refiners are in need of immediate relief if there is not a further lowering of spot prices.

The low prices in most cases are coming from the smaller refiners who are dependent on spot sales for the week-to-week movement of their gasoline output. The larger refiners in Oklahoma are still making most of their sales on a 9¼-cent basis to the jobbing trade for the U. S. Motor grade. At the same time there is gasoline available from marketers and refiners at prices from one-half to 1 cent under this 9½-cent price which was established early in June.

There is a belief in the trade that one or more of the large companies operating outside the Mid-Continent area this week will come into the market and strengthen the domestic price by purchasing a substantial quantity of the so-called distress gasoline. Estimates as to the quantity of this material available vary but many of the trade feel that a 500-car order for July distributed among the weaker market factors in the Mid-Continent Field would tend to stabilize the market over the next 30 days. Others feel that a 1,000-car movement would be necessary to relieve the present distressed situation.

Threatens Tank Wagon

It is known that at least two of the major companies in the past few days have made checks on the quantity of gasoline now available at low prices. It is pointed out in this connection that some relief will be necessary if the present gasoline tank wagon and service station schedules are to be maintained in the Middle West. These prices were just recently established and it is assumed were meant to continue effective at least until early fall. Should the general U. S. Motor gasoline market in Oklahoma and other Mid-Continent points drop to 8 cents or less it would probably be necessary to lower tank wagon schedules during the season of maximum gasoline consumption.

No Export Advance

The necessity of substantial domestic buying was stressed during the past week when it became apparent that the Petroleum Export Association could not agree on an advance in Gulf Coast export prices on gasoline. The action of the association is explained elsewhere in this issue. The position of the association apparently assures that the Mid-Continent refiners will not secure any relief through purchases by exporters and will be dependent on domestic outlets except for a small quantity of contract material.

The exporters accustomed to buy in the Mid-Continent area state that they would not be able to pay more than 8 cents, f.o.b. North Texas plants for 64-66 375 material as long as the Gulf Coast price continues at 10 cents. Sellers as yet are not willing to consider sales at the 8-cent price.

Small Spot Movement

Several refiners and others connected with the Mid-Continent have expressed surprise at the small spot demand since the first of June. It was expected that this movement would show a large increase with the start of summer.

As one Oklahoma sales manager expresses it, "There isn't any spot demand because there isn't any spot business." He and others take the position that less and less material is being purchased on the spot market basis. This is due to two developments. The past year has witnessed the purchase of many jobbing concerns by refiners who supply the stations from their own plants. Scarcely a week

(Continued on Page 176)

REFINED MARKET BAROMETER

The outstanding price development of the week in the refined market of the United States was the lowering of kerosene export prices at the Gulf Coast. Prices on both the prime white and water white grades were reduced three-quarters cent per gallon. The domestic market on kerosenes also reflected weakness at several points. Gasolines continued soft at interior points despite a heavy consumption. Weakness in this product centered in the Mid-Continent and Middle West. Fuel oil prices were steady with a heavy movement reported at coastal points. Gas oil prices were unchanged. Natural gasolines were soft in the Mid-Continent with higher prices in California. High viscosity stocks and finished motor oils are in strong demand but prices on steam refined and bright stocks have reacted somewhat in the eastern areas. Petrolatum prices firm. Wax market easier in East with more inquiries in Mid-Continent.

Mid-Continent—Refinery gasoline market soft with wide range in prices. Distress gasoline available from practically all areas. Kerosene prices lower except in north Louisiana and Arkansas. Natural gasoline soft and prices lower. Fuel oil and gas oils steady. Steam refined stocks and bright stocks strong. No change in wax prices.

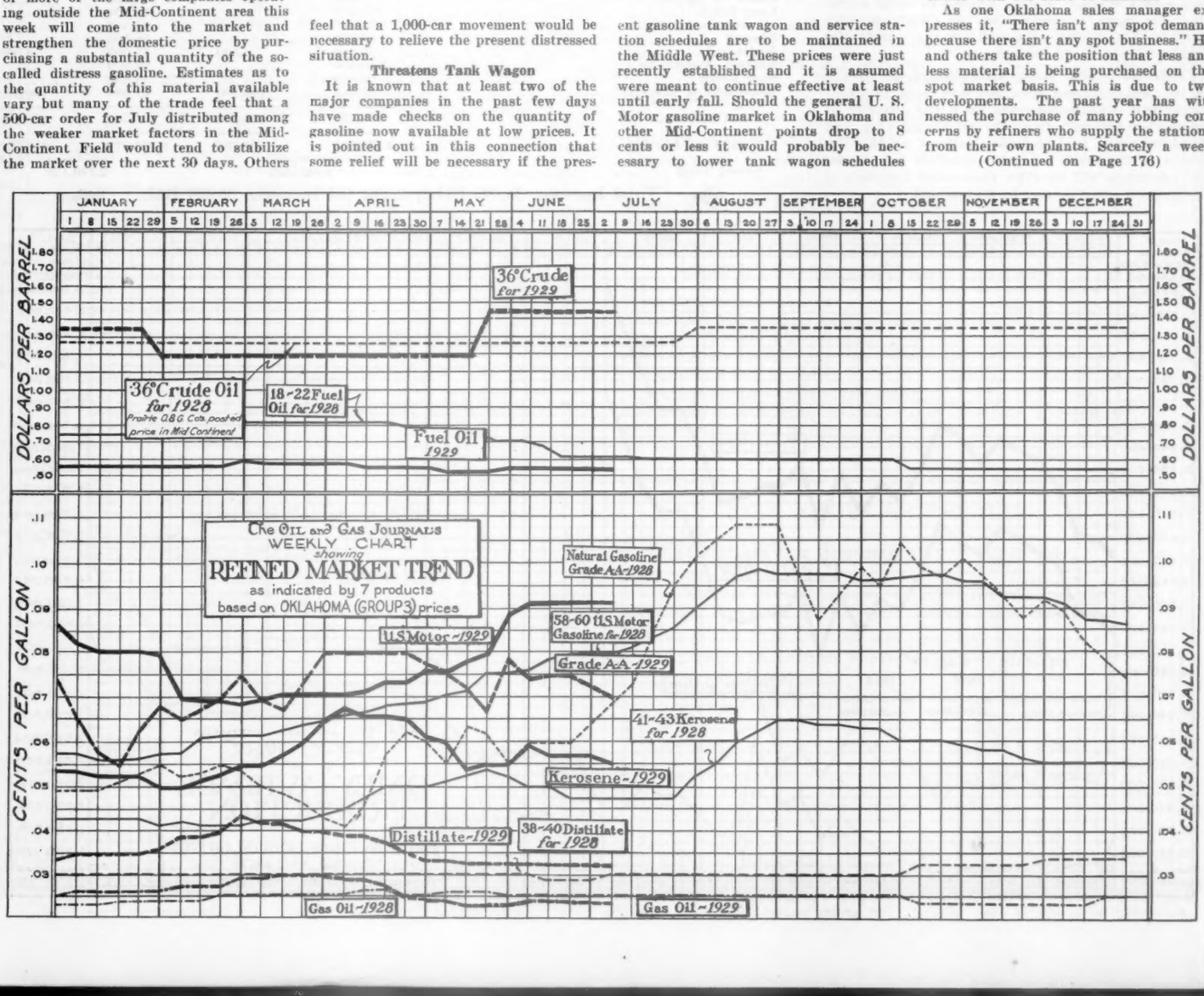
East Coast—Gasoline prices firm with good movement. Kerosene prices for domestic movement firm. Lubricating oils and petroleum wax easier. Heavy consumption of fuel oil from steamship trade aids demand. Fuel oil and gas oil prices steady.

California—Natural gasoline prices higher. Distillate prices reduced.

Chicago—Jobber demand for gasoline slow and prices weak. Kerosene quiet and prices lower. Fuel oil prices firm. No change in gas oil. Lubricating oils quiet.

Pennsylvania—Good movement of gasoline at steady prices. Kerosene prices lower. Slight price reaction in steam refined stocks and bright stocks.

Gulf Coast—Good demand for high viscosity lubricating oils. Lower viscosity oils soft. Fuel oil market firm.



Marketing Facilities Expand in Tulsa

Representative Consuming Center Has 235 Drive-In Stations With 631 Gasoline Pumps. Investment Exceeds Yearly Gross Revenue

By C. O. Willson

There is a pump dispensing gasoline in the city of Tulsa for every 48 motor vehicles.

Back of every registered car in that city is an investment of $125 by oil companies to furnish gasoline, lubricating oil and greases.

The average sales of gasoline per pump total less than 90 gallons daily and each pump serves an average of 14 customers daily.

Drive-in stations, which represent an average investment of approximately $20,000, sell an average of 172 gallons of gasoline and 4.7 gallons of lubricating oil daily.

The total investment in stations exceeds the gross yearly revenue exclusive of the state gasoline tax.

The foregoing are some of the conclusions arrived at in a survey made of marketing conditions in Tulsa. The investigation was made for the purpose of determining conditions in a city which is typical of many consuming centers. While the Tulsa situation in regard to the operation of bulk and retail service stations may be unusual in some respects those in touch with market conditions throughout the Middle West and Southwest are authority for the statement that the trend toward rapid expansion in distribution which has been outstanding in Tulsa for the past three years, is general among cities. Tulsa has a population of 170,000 people according to an estimate of Federal Census Bureau.

Executives of large companies engaged in all branches of the oil industry as well as independent jobbing concerns whose sole activity is the merchandizing of refined petroleum products have expressed concern as they endeavored to keep pace with a trend toward greater and greater expenditures in marketing facilities despite a reduction in volume of merchandise sold per unit of investment. As a result many concerns are giving thought to the possibilities of the combination stations of various types with the view of selling their petroleum products at lower marketing costs.

Marketing Facilities

The situation in Tulsa in regard to the number of all types of stations, including the number of pumps, is summarized in the accompanying table:

	No. outlets	No. pumps
Company-owned stations	153	481
Privately-owned stations	82	150
Garages and drive-in stations combined	6	12
Garages with curb pumps	77	99
Tire shops	14	27
Miscellaneous curb dealers	19	22
Accounts buying private consumption	66	73
Total (all classes)	417	864

It will be noted that most of the pumps are found in the company and privately-owned stations. The curb pump has not been an important factor in Tulsa gasoline marketing in recent years and as more and more companies entered the city with drive-in stations the curb sales have constantly decreased in volume.

In the past two years a few tire shops and the ramp type garage or auto hotel have installed complete gasoline and oil service and in some cases the sales of these concerns compare favorably with the drive-in stations devoted exclusively to the sale of oil products. A city ordinance has to a large extent eliminated the old type of curb pump in front of the garage.

Thirty-one Companies

At the present time there are 31 companies selling gasoline in Tulsa. This total is divided among 19 refining companies and 12 companies which may be classed as independent jobbing concerns.

Following is a list of the refining companies which have one or more stations in Tulsa: Barnsdall Oil Co., Chastain Oil Co. (now owned by the Tidewater Oil Sales Corp.), Cities Service Oil Co., Continental Oil Co., Independent Oil & Gas Co., Magnolia Petroleum Co., Marland Refining Co., Mid-Continent Petroleum Corp., National Refining Co., Phillips Petroleum Co., Pierce Petroleum Corp., Pure Oil Co., Shell Petroleum Corp., Sinclair Oil & Gas Co., Sun Oil Co., The Texas Company, Transcontinental Oil Co. and the Wilcox Oil & Gas Co.

The jobbing concerns are Bradford Oil Co., Gibson Oil Co., Hi-Test Oil Corp., Knox Oil Co., Little Giant Oil Co., Monarch Oil Co., Oliver Davis Oil Co., Rainbow Oil Co., Scotch Oil Co., Southland Gasoline Co., Star Oil Co. and W & L Oil Co. These are believed to be all the jobbing concerns selling in Tulsa, although there are other companies selling in adjoining towns in Tulsa County.

The sales of independent jobbers in Tulsa, considered as a unit, have decreased due to the fact that the largest jobbing concerns have been purchased by refining companies. The outstanding development in the Tulsa marketing field has been the rapid entry of refining companies with bulk and retail stations. The number of these companies has doubled in the past three years. Out of the total of 153 company-owned stations in the city 125 are owned by these refining companies which own 683 of the 864 gasoline pumps in the city.

Several of these refining companies are independent concerns which are newcomers in the marketing field. Their entry in Tulsa and other points was due to a decision on the part of the management that their overall position in the petroleum industry would be more secure if they secured bulk and service station facilities to handle all or a large part of the gasoline output of their refineries.

With the exception of the Magnolia, Skelly, National, Phillips and Shell, all of these companies have refineries located in Oklahoma. The Magnolia and Phillips companies have refineries adjoining Oklahoma in Texas and the National, Skelly and Shell companies have refineries in Kansas. The Mid-Continent Petroleum Corp. and The Texas Company have refineries in West Tulsa and the Pierce Petroleum Corp. has a refinery in Sand Springs which adjoins Tulsa. In the case of the outside refineries the gasoline can be brought to Tulsa at a freight rate varying from three-fourths to 1½ cents per gallon.

Investment in Facilities

In all cases, these refining companies have two or more company-owned stations. Several of the companies do not sell their products outside the stations which they own and operate. In the past two years many elaborately equipped and expensive stations of all types have been built by these companies. In most cases the sales of these stations are confined to oil products although at present two companies are building super-station facilities which afford tire and battery service as well as the usual oil service station facilities.

It is estimated that the investment in bulk and retail service stations in Tulsa is in excess of $5,000,000. This is divided as follows:

225 drive in stations* (company and private ownership)	$4,757,600
Bulk stations	400,000
233 curb pumps	35,000
Total	$5,192,600

*Includes site.

The investment in drive-in stations is figured on an average per station expenditure of $20,000. Many probably will conclude this is too high for an average figure as many stations represent an investment under $10,000. Taking into consideration the value of sites located in the down-town section of Tulsa where a large number of stations are located, it is not believed that the average figure is excessive. Down-town sites in Tulsa are purchased or leased on a basis of from $500 to over $2,000 per foot front. This means that the value of the sites runs from $20,000 to as high as $125,000.

In these down-town locations the minimum expenditure for station improvements is probably $10,000. Most of the stations are large with complete equipment and the investments in improvements runs as high as $40,000. One station whose sales are confined to gasoline and lubricating oil with greasing service is valued at $165,000.

In the residental sections, sites on the main laterals leading to the business section bring a minimum of $5,000 with $5,000 usually the minimum spent on station improvements. Many of these stations represent an investment in excess of $20,000. Oil companies in Tulsa as in many other cities are at the mercy of property owners in the purchase of new sites. Real estate dealers have been quick to discover the desirable locations in the new residential sections and the station buyer has been forced to pay excessive prices for sites.

The bulk station investment of many of the companies marketing in Tulsa is relatively low and in a few cases due to the proxmity of refineries, bulk stations are not maintained. In cases where bulk stations are maintained it is usually not necessary to build large storage facilities. The gasoline can be brought by rail from the nearby refineries in a day haul so there is no necessity for carrying large inventories. The estimate of $400,000 does not include the investment in division offices maintained at some of the stations.

The 233 curb pumps at garages, tire shops, etc., are valued at $150 per unit of installation. This is probably too low for an average figure in Tulsa for the reason that some of the dealers are given extra equipment, including a number of small tanks for lubricating oils. It is a common practice in Tulsa to install a pump at a warehouse or some other building from which a number of trucks and other motor vehicles are operated by private owners. These accounts generally are sold on a tank wagon basis.

Consuming Market

There are 42,000 motor vehicles in Tulsa, consuming 70,000 gallons of gasoline daily. Both figures are estimates derived from accurate reports showing the number of registered cars in all of Tulsa County and the revenue derived

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25 LARGE STATIONS IN TWO-MILE TULSA DRIVE

A motorist driving from Lewis and Fifteenth Streets to the business section of Tulsa on Boston Avenue will have no difficulty in finding a place to buy gasoline and lubricating oil.

In this drive of 2 miles he will pass 25 drive-in stations including two stations under construction. These stations are all elaborately equipped and including the value of the sites it is estimated that they represent an expenditure in excess of $1,000,000.

All but three of these stations are owned and operated by oil companies. Two of the stations are owned by tire companies and third is an auto laundry with 10 gasoline pumps.

Fifteen oil companies own the remaining 22 stations. All the stations have facilities for greasing cars. Approximately half of the stations were built or remodeled in the past year.

OKLAHOMA DELEGATION REPORTS TO GOVERNOR ON OIL CONFERENCE

The Oklahoma state delegation representing Governor Holloway at the conference of governors of oil-producing states held at Colorado Springs on June 10 has, through its subcommittee, made a report to the governor in which it is stressed that unity of opinion cannot be brought about in the industry in Oklahoma until the tariff question is settled by Congress one way or the other, and that if another conference is called it should include only representatives of Oklahoma, Texas and California and possibly Kansas, Louisiana and Arkansas.

The report is signed by Pat Malloy, chairman, and James A. Veasey, E. W. Marland and J. Berry King, members of the committee, and says in part:

Strictly a Private Enterprise

"Four governors attended the conference in person, namely, the governors of Kansas, Wyoming, Montana and Colorado. These gentlemen, in the opinion of your subcommittee, emphasized too strongly the public interest in the problem of oil conservation. Other speakers stressed this point of view also. If the sole purpose of these remarks was to point out that we are dealing with an irreplaceable natural resource, which is indispensable to the general well being of the American people and to the national security, we may well accept the same as a correct generalization, subject, however, in the making of national petroleum policy to very definite limitations. The petroleum industry in Oklahoma, and elsewhere in the United States, is strictly a private enterprise. Those who own and operate such petroleum resources are not in any legal sense trustees for the public. Petroleum lands, outside of the Rocky Mountain states, and to some extent in several of the other states, but particularly so in Oklahoma, are privately owned. The only statutory limitation which may be placed upon the use of this property are laws by the state to prevent waste. The Federal Government has no power over the subject whatever. If, therefore, either the discussions of these distinguished men, or the tendency thereof, was to intimate the classification of any branch of the American petroleum industry, producing, refining or marketing, as a public utility, it is not only the united opinion of this committee, but that of the industry in this state and everywhere else in the United States that any such possibility should at all times most vigorously be contested and opposed.

Objection to Interstate Agency

"While there was discussion upon the possible form of an interstate decree, because of the strongly avowed position of the delegation from Oklahoma, Texas and California, that the extent to which they

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Results of Tests of Aluminum Tank

Year's Experiment with West Texas Sulphur Crude Shows Interesting Data. Chemical Analysis of Precipitates Given

By L. G. E. Bignell
Petroleum Engineering Editor

For some time past considerable attention has been given to the problem of excessive corrosion of equipment in the limestone areas, especially of West Texas and the Panhandle, and many systems of prevention have been suggested and tried with varying degrees of success.

The metal used for this equipment has almost without exception been a ferric compound, that is, some form of iron or alloys of that metal, and this metal has always shown a great affinity for sulphur

Blister formed on aluminum tank bottom from contact with iron sulphide scale.

and as the oils produced from these limestone areas carry both sulphur and hydrogen sulphide, it would seem that as long as the use of ferric metals continues the two elements will combine and the trouble will go on.

The rusting of iron has been known and noted since man learned the art of reducing iron ores to metallic iron and forming this iron into useful articles, and the reaction commonly known as rusting is oxidation at the surface of the metal through the action of air or moisture.

Corrosion is distinguished from "rust" because it is the action of chemical reagents, and in the particular problem under consideration corrosion is accelerated by the presence of hydrogen sulphide and sulphur compounds in the oil, gas and water produced from wells in these limestone areas.

It therefore would seem that the logical way to prevent rusting or corrosion, which are properties of ferric metals, would be to select some other metals for this equipment which have all the other desirable properties necessary to permit them to be worked in much the same manner that iron and steel are fabricated.

Alloys Have Been Used

Several metals, or perhaps, it would be more correct to say "alloys" of ferric metals, have been suggested and some have been tried, but the success attained has not been marked in any instance, although some chromium alloys do seem to present certain desirable qualities as a suitable compound to withstand these severe reactions.

The ideal metal would be one that could not or would not combine easily with sulphur to form compounds of that element.

Aluminum seems to possess most of these ideal properties and this statement is not based solely upon laboratory and chemical experiments, although such experiments did pave the way to the ultimate field tests, but on the actual use of aluminum in a number of places for the manufacture of equipment to be used in the petroleum industry.

Comparatively speaking, aluminum is one of the most recent metals to be produced in commercial quantities, at a price that would permit its use in the arts and industries, for as late as 1850 aluminum was considered a very rare metal.

No Affinity for Sulphur

The process followed in aluminum reduction plants indicates the absence of any direct affinity between aluminum and sulphur, although aluminum does form the base of certain sulphates and chlorides. A notable example is aluminum sulphate, more commonly known as alum, which, however, is readily dissolved in water, as are all other aluminum salts.

These facts being well known to the chemist and metallurgist, as well as many others relating to the actions of the metal when used in equipment required for various arts and industries, it was decided to make some field experiments with aluminum to determine its fitness to withstand the actions of sulphur and sulphur compounds which have been causing such rapid corrosion of apparatus used in handling oil, gas and waters from certain areas.

Pipe, tubing, nails, bolts and nuts, castings and plates have been used in various pieces of equipment handling sulphur oils and have given good results, and in the spring of 1928 it was decided to install a 500-bbl. bolted aluminum stock tank in West Texas where corrosion of steel tanks had been rapid.

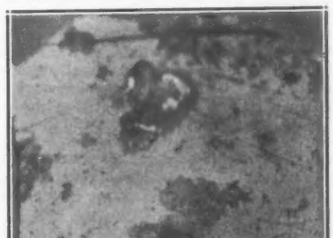
This test was sponsored by The Aluminum Company of America and the Parkersburg Rig & Reel Co., and the Gulf Production Co. permitted the installation to be made on its State-Lassiter lease in Crane County, Texas.

The tank was put into service on April 5, 1928, and was built of aluminum in every detail, and was of standard size, 14 feet by 9 inches inside diameter by 16 feet 2 inches inside height, with plates, bolts, nuts and flanges of aluminum as well as the angles and channels forming ladder, side channels and rafters being made of the same metal.

In The Oil and Gas Journal of May 17, 1928, an article was published giving full specifications of this and the composite tank used in this test, and quotation from that article appears in an official announcement of the results of one year's test of these tanks in the article by Mr. Chesley in this issue.

Both the all aluminum and the composite tank, the latter made with steel bottom and lower ring and aluminum deck and upper wing, were opened for inspection by the lease foreman of the State-Lassiter lease April 15, 1929, one year and 10 days after being put into use.

In the arrangement of the battery the aluminum tank was at the south end



Aluminum blister opened showing top portion and powder within.

and it had received and handled only oil, gas and water direct from Nos. 4 and 7 wells during the test period, while the composite tank was at the north end of the battery and had been used for receiving treated oil after the production had passed through the electric dehydrator and had been made into a pipe line grade of oil.

Opened aluminum blister showing white powder precipitate.

Both tanks were cleaned by shoveling in sand on the bottom and then removing it and sweeping the tanks clean. No attempt was made to clean the sides or deck of the tanks, other than that resulting from the natural drainage which occurred when the tanks were emptied.

One side sheet in the lower ring was removed from each tank and half of the deck of the all aluminum tank was unbolted and lowered to the ground to permit close inspection.

No Corrosion Noted

Inspection of this deck showed that there had been no corrosion of any kind but there had been an accumulation of a material, apparently precipitates from

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CLAIM MADE ALUMINUM TANK WILL ENJOY LONG LIFE IN WEST TEXAS

By J. O. Chesley
Aluminum Co. of America

Readers of The Oil and Gas Journal will perhaps recall an article in the issue of May 17, 1928, descriptive of the beginning of the test on composite aluminum-steel, and aluminum lease tanks on State Lassiter lease, Crane County, Texas. On April 15, 1928, a little more than a year after these tanks were put in operation, they were opened, cleaned, and a thorough inspection made by representatives of Parkersburg Rig & Reel, the Gulf Companies, Bureau of Mines, and the Aluminum Company of America.

For the benefit of those interested in the details of these tanks and to save them the trouble of looking through their files of the Journal, we are taking the liberty of quoting from the original announcement:

"Parkersburg Rig & Reel Company and Aluminum Company of America therefore jointly decided to test out some of the commercial forms of aluminum and its alloys in bolted tanks and a location was selected by a check of production conditions in the West Texas area where corrosion had already made itself evident in well equipment and lease tanks, the Guf Production Company kindly permitting us to conduct the test on its State-Lassiter lease in Crane County, Texas.

"Tanks were fabricated by regular production methods and tools at the plant of the Parkersburg Rig & Reel Co., Parkersburg, W. Va. In fact, they were run along with an order for steel tanks of the same size then in process.

The two tanks under test are each 500 bbl. capacity, inside diameter 14 feet 9 inches, height 16 feet 2 inches; one tank is entirely of aluminum and its alloys; the other is composite construction, lower ring and bottom being of steel, top ring and deck of aluminum. The following lists show the kind of aluminum, or aluminum alloy, parts used in each tank:

ALL-ALUMINUM TANK

Upper Ring Side Sheets	Aluminum .114" thick	Grade 3S6
Lower Ring Side Sheets	Aluminum .114" thick	Grade Alclad 17ST
Bottom	Aluminum .114" thick	Grade 3SH
Deck	Aluminum .114" thick	Grade 3SH
Ladder 2"x2"x3/16" Angles	Aluminum	Grade 17ST
Side and Bottom Channels	Aluminum	Grade 17ST
Manhole Ring	Aluminum	Grade 51SW
Fittings, Pressure Gauge, Thief Hole Cover	Aluminum, Cast	No. 43
Bolts and Nuts	Aluminum	Grade 17ST

COMPOSITE STEEL ALUMINUM TANK

Bottom and lower ring	Steel 12 Gauge	
Upper Ring	Aluminum .081" thick	Grade 3S6
Deck	Aluminum .081" thick	Grade 3SH
Inside ladder, channels, bots and nuts of upper ring	Aluminum	Grade 17ST

Fixtures on this tank are regular cast iron and wrought fittings.

From the above list it will be noted that several different grades of aluminum are used in this tank. Inasmuch as the Aluminum Company's symbols may not be familiar to all, the following explanation is given.

3S6 and 3SH—These are three-quarter hard and hard tempers of manganese-aluminum alloy containing 1 to 1½ per cent manganese, balance commercially pure (99 per cent or better) aluminum.

17ST—The well known "Duralumin." An alloy of copper, magnesium, manganese and aluminum having the strength of ordinary sheet or structural steel. Generally used for aircraft work, railway coach construction, etc.

Alclad 17ST—Duralumin with a coating of high purity aluminum on both sides, aluminum used for this coating being 99.4 per cent pure or better.

51SW—An alloy containing magnesium, silicon and aluminum. This is also classed as one of the strong alloys.

No. 43—A casting alloy containing silicon and aluminum.

It will be noted from the above that the test included a number of the most common alloys of aluminum as well as the high purity aluminum used in coating the 17ST sheets for the bottom ring and bottom of the all-aluminum tank.

Experience has shown that brines gen-

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Effective Beam Pumping of Large Wells

Five Major Factors Contribute to Plunger Pump Efficiency. Detailed Studies of Each Well Are Needed

By H. T. Wyatt*

Due chiefly to the great thicknesses of oil sand drained by most wells in California the productive capacities of these wells, even after the flowing stage has passed, may exceed that of pumping equipment. Wells that pump 400 or 500 bbls. of oil per day for several months are not uncommon and many wells pump over 200 bbls. per day for several years. Such productive capacities, together with the great depths to which wells are now being drilled, result in pumping problems of major character.

This paper has been prepared to discuss the various factors entering into the problem of obtaining maximum oil production with beam pumping. Wide variation in operating conditions in different fields and even between wells in the same field makes it necessary for an operator to conduct detailed studies of every well, and in so doing it is important that he base the selection of equipment and methods on principles that are theoretically sound. For this reason, an attempt will be made in this paper to consider the pumping of deep wells of large capacity from both theoretical and practical standpoints. The paper, however, will deal only with the general principles of production and will not discuss details of construction of special equipment.

Theoretical Considerations in Pumping

The problem of obtaining maximum fluid production from a well is a simple one from a theoretical standpoint. It involves the reduction of back pressure on the producing formation to a minimum in order to obtain the maximum rate of flow of fluid into a well, and provision of a pump of sufficient capacity to remove the fluid as fast as it enters the well. The ideal way to fulfill these conditions for maximum production is to pump a well from bottom with a pump of such plunger diameter and at such rate and length of stroke that with 100 per cent volumetric efficiency the fluid will be kept down to the pump level. This would remove all back pressure from the producing formation and would recover all the oil that would enter the hole. In practice, however, it is found that volumetric efficiencies are usually much lower than 100 per cent and pump capacity depends on factors other than the size of plunger and number and length of strokes.

Aside from these considerations, operators now recognize the value of efficient use of natural gas as a force for driving oil from the sands to the well, and the lowest possible back pressures, while conducive to maximum present oil production, may not lead to maximum ultimate oil production. Low back pressure frequently results in even larger increases in gas production than in oil production and therefore in lower recovery efficiencies, and for this reason farsighted producers may not choose to operate their wells under conditions that reduce back pressures to a minimum and if not, these modified conditions of back pressure, whether by high fluid levels or by gas pressure in the casing, have their influence on pump operation and fluid recovery.

Five Major Factors

Five major factors are recognized as contributing to plunger pump efficiency. The first is clearance to which "gas locking" of a pump is closely related. If a pump is operating in "solid" fluid and no gas is present, clearance has no effect on volumetric efficiency. This is true because fluid is practically uncompressible and cannot be compressed in the space between the traveling and standing valves, but is drawn into the barrel on the suction stroke and discharged through the traveling valve on the return stroke of the plunger. The presence of gas alters this condition, however. Gas drawn into the barrel on the suction stroke will be compressed in the space between the traveling and standing valves on the return stroke of the plunger, instead of discharged into the tubing, because the pressure on the traveling valve ball exerted by the column of fluid in the tubing is enough to hold it on its seat. On following suction strokes, the gas merely expands to again fill the barrel and no fluid can enter because of the pressure on the standing valve ball. When this happens, a pump is said to be "gas locked," and the volumetric efficiency becomes zero.

The second factor in pump efficiency is "slippage." By "slippage" is meant the loss of fluid past the plunger as it moves upward on the suction stroke. The magnitude of this factor, which contributes to lower volumetric efficiency, depends on fluid pressure, but is also greatly influenced by the viscosity of the fluid being pumped and the space between the plunger and working barrel. The operator usually has no control over the viscosity of the fluid, but he can regulate the fit of plunger and barrel between narrow practical limits both by original choice of "fit" and by replacing worn plungers with plungers of certain fit.

Area of the Passages

A third factor of importance, particularly in large capacity wells, is the area of the passages through the pump, together with the speed of valve action. It is interesting to calculate the speed at which fluid must pass through the standing valve of a 2½-inch pump operating at 25 strokes per minute in the "third hole" (40-inch stroke), in order to fill the pump barrel on the suction stroke. The average speed of fluid travel through the 1-inch opening in the valve is 810 feet per minute if the barrel is to be filled completely. In fact, this is the minimum velocity at which fluid must pass through the standing valve, because if the standing valve is slow to open, the fluid will have less time to enter the barrel and the velocity must be correspondingly higher in order for the barrel to fill. The friction losses resulting from such high velocities can be reduced by using larger valves and for this reason oversize balls and seats are in general use. In the larger sizes of pump, however, the standing valve is limited in size by the weight of the ball, because the weight increases as the cube of the diameter of the ball whereas the available lifting force varies only as the square of the diameter. The weight of a large ball may so slow down valve action that the advantage of using a large diameter valve is completely lost.

Outside Pressure

The extent to which friction and valve action reduce volumetric efficiency is dependent largely on the fourth factor, namely, the outside pressure available for driving fluid into the pump. In large capacity wells, this factor is probably the most important to be considered, for of the two forces available for filling the working barrel with fluid, the suction or partial vacuum created within the barrel is almost certain to be small by comparison to the head in the well, excepting when a gas anchor is used to separate oil and gas. Theoretically, the greater the pump submergence, or the greater the pressure at the working barrel, the faster the barrel will fill. While this is conducive to high pump efficiency, it may not lead to greatest production because high fluid levels in the casing, to give submergence to the pump, result in back pressure on the formation. As the chief force for moving oil from the reservoir to wells is expanding gas, and the energy for driving varies with the expansion ratio, it is apparent that the pump submergence must be balanced against formation pressure to obtain greatest pressure differential between formation and casing and at the same time maintain a favorable submergence.

The fifth factor affecting volumetric efficiency of pumps is the relative length of plungers and polished rod strokes. The polished rod stroke is definitely set by the adjustment at the crank, but the plunger stroke may be either longer or shorter than the polished rod stroke because of the tendency of both tubing and rods to stretch and contract with the varying loads during each pump cycle. These loads vary not only because of such factors as pumping speed and different degrees of acceleration during a stroke, but also because of changes in the density of the fluid lifted. Certain adjustments of stroke length and rate, including modification of accelerative components of stroke rate by counterbalancing, may be made to increase pump capacity, and at present such changes must be determined largely by experiment.

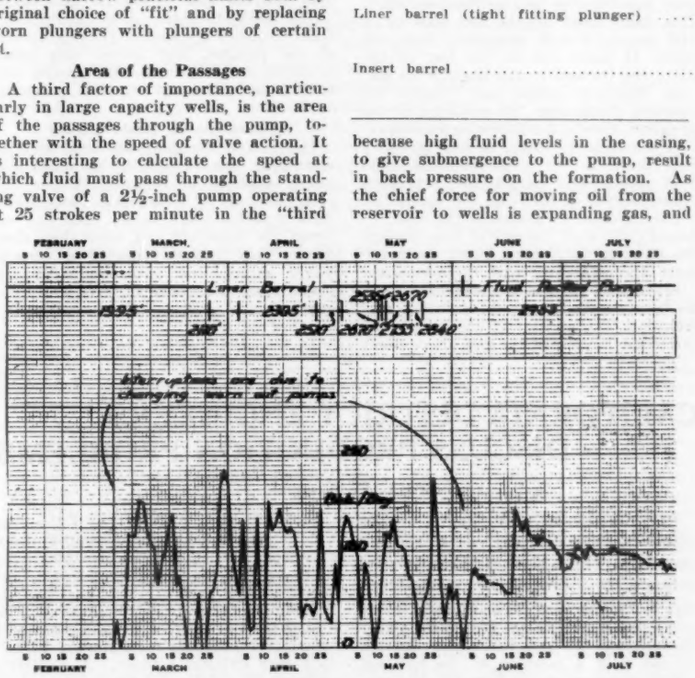

Figure 1—Production graph comparing average daily production with tight fitting and fluid packed plungers.

Pump Selection, Size and Capacity

Several types of pumps are in general use in California and due to details of design, these pumps, even though they may bear the same nominal rating, have different theoretical capacities when operated with the same rate and length of stroke. For example, a standard 2½-inch liner barrel pump has a plunger diameter of approximately 2¼ inches, while a 2½-inch insert type pump has a plunger diameter of only 1⅞ inches. With a given rate and length of stroke, the liner type pump theoretically should lift more fluid. The three general types of pumps commonly used in California, with their theoretical capacities under average combinations of stroke, rate and length, are given in the tabulation:

Type of pump	Size in inches	Speed r.p.m.	Stroke	Cap. bbls. per day
Fluid sealed plunger	2	25	3rd hole of crank	183
	2½	25	(= 40 inches)	295
	3	25	"	387
	4	20	"	590
Liner barrel (tight fitting plunger)	2	35	3rd hole	357
	2½	25	"	590
	3	25	"	880
	4	20	"	1638
Insert barrel	2	25	3rd hole	263
	2½	25	"	437
	3	25	"	736
	4	20	"	1148

Inspection of the above tabulation discloses a surprisingly large capacity for some pumps even when operated at moderate speeds and with strokes of average length. It is obvious from the tabulation that if pumps can be made to operate at reasonably high volumetric efficiencies, only an occasional well will be found that will not flow but still will be capable of producing more fluid than a pump can handle.

The operator must give first consideration to pump capacity if he expects to obtain the maximum daily production of a well. A pump which has a theoretical plunger displacement of less than 600 bbls. per day, for example, cannot be counted on actually to pump 600 bbls per day from a well unless some unforeseen factor or factors, such as natural gas, operate to increase the volumetric efficiency of the pump to more than 100 per cent. When choosing between two sizes of pumps for a well, the maximum production of which is known within fairly close limits, the operator must decide whether to choose a large pump of ample capacity, even though this might have such disadvantages as deviating from the usual standard, heavier loading of the mechanical equipment, and the like, or whether he should choose a smaller pump which possibly conformed to his field standards, and attempt to operate it in such manner as to hold its efficency at a high level and thus insure obtaining the maximum fluid production. In general, because of limitations in casing size and advantages of lighter loading, it is advantageous, if not necessary, to decide on the smaller sizes of oil well pumps and attempt to operate them in such manner as to obtain good volumetric efficiency. Loading alone may become a determining factor. The use of a large pump and large tubing in a deep well may result in such large fluid loads that sucker rods will not operate satisfactorily and the

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*Before California District, A. P. I., Division of Development and Production Engineering, Los Angeles, June 27.

Economical Production of Small Wells

Analysis Affecting 95 Per Cent of Total Number of Wells, Producing About 50 Per Cent of Country's Oil

By Allison C. Dyer
Assistant Petroleum Engineer, United States Geological Survey, Taft, Calif.*

A small well is one in which the primary objective is to secure the maximum production rate at a minimum operating cost. This contrasts the meaning of a large well where the primary objective is to secure the maximum production rate, the operating cost being of minor importance. This point may be brought out by a hypothetical case of an operator having two wells, one producing 500 bbls. and the other 50 bbls. daily. Assume the production cost on the large well to be $10 per day; then the production cost on the larger well will be but 2 cents per barrel, while on the smaller well it will be 20 cents per barrel. Naturally, this operator will be most interested in production methods which will lower his cost on the small well.

It is evident that there is a point in the life of every large well where an economic change occurs in its status—where it indeed becomes a small well—and the production methods to be applied before and after this change are radically different.

An analysis of the production of crude oil in the United States as published by the American Petroleum Institute, indicates that over 95 per cent of the total number of wells may be classed as small wells as herein defined. As those wells total over 300,000 and produce about 50 per cent of our oil, methods which will lower production costs on such wells are of great economic importance. This paper attempts to describe such methods.

Production Costs

A study of production costs on pumping wells will usually show that 75 per cent to 90 per cent of the total well costs are due to the following conditions:

1. Failure and wear of subsurface equipment.
2. Wells "sanding up" or valves "balling up."
3. Repair and maintenance of surface equipment.
4. Power costs.

As a rule, small pumpers with standard equipment are pumped from 5 to 20 times faster than the maximum rate of migration from the formation. This condition has not received the attention it deserves from engineers and superintendents. It is the natural inclination of production crews to speed a well up when the production begins to fall off. They do not realize that a 3-inch pump, for instance, in the first hole will produce over 20 bbls. daily at only 1 stroke per minute with full volumetric efficiency. If the necessary equipment and methods are installed for operating small wells at one-tenth to one-twentieth their present speeds, and still get the same or greater production by securing high volumetric efficiency, a tremendous saving will be effected in the major items of operating well costs enumerated above. Indications are that improved methods and equipment will reduce total operating well costs by at least 60 per cent on the average pumper, or about $3.65 saving per well per day. This means that $1,000 invested in modern equipment would be paid out in nine months' time on the average well.

Development of Basic Theory

The economic success or failure of a small well depends, to a great extent, upon the method of "lifting" the oil from the sands. Of two wells, each with the same potential oil revenue, the one improperly produced will dissipate these revenues in operating expense. The other rightly produced will show dividends from the start straight on through until the sands are finally depleted.

With this in mind, what is the right way? The problem is not simple. No one can say that one method is absolutely right and all the rest are inherently wrong. The field is too broad for that.

There is one thing we can do—formulate a basic, economic theory of producing oil from small wells. We can do this and the rule of "right or wrong" will definitely apply here. If it is right, it will adapt itself to any given set of conditions. Then, having the correct basic theory we can choose the method which most nearly corresponds.

In the formulation of such a theory there is one fact to bear in mind; all oils in their natural state bear more or less gas in occlusion and gas in solution. It is highly important that these gases be retained in the oil until it reaches the surface. Retained, these gases not only reduce the viscosity of the oil, and, consequently, the frictional resistance, but also lower the surface tension of the oil and it will carry less sand to the surface. Liberated, these gases only serve to "gas bind" the pumping mechanism.

To Retain Gases

In order to retain these gases in solution and occlusion we must:

1. Maintain a proper fluid column head against the oil in the formation. This head must not be too high or it will unduly retard migration from the sands. It must not be too low or the oil in the formation will liberate its gas.
2. Properly design and operate the pumping mechanism. An analysis of the situation reveals the following factors:

(a) As stated above, in any pumping well there is one most efficient fluid level which will effect the maximum drainage rate of oil from the formation.

(b) In order to maintain the most efficient fluid level, the rate of flow through the standing valve must equal the maximum drainage rate from the formation.

(c) Again, as stated above, the oil in the well contains gas in solution and occlusion. The amount of gas in solution varies as the pressure, and the volume occupied by the occluded gas varies inversely as the pressure.

(d) A pump barrel is submerged in this column of live oil. In order to fill this barrel there must be a pressure differential between the inside and outside of the barrel sufficient to overcome the resistance of the standing valve.

(e) This pressure differential varies as the rate of plunger displacement within the barrel.

(f) The lowered pressure within the pump barrel, draws gas out of solution in the oil and expands the occluded gas in the oil. In order to maintain the full volumetric efficiency of the pump barrel this expansion must be as small as possible.

Then in order to accomplish our purpose:

1. The total plunger displacement must be equal the maximum flow of oil from the formation, at the same time retaining the proper fluid column head.
2. The rate of plunger movement must:

(a) Be such that it will accommodate the maximum flow mentioned above;

(b) At all times be such that any additional pressure differential, over and above that necessary to overcome the resistance of the standing valve, will be a minimum. This will avoid unnecessary expansion of gas in the barrel and will tend towards full volumetric efficiency.

The ideal fulfillment of the above condition requires a constant velocity stroke of the plunger. The nearer this ideal condition can be attained, the greater the production efficiency of the pumping mechanism.

Application of Basic Theory

Head Well Pumping—A head well is essentially one in which the sands are nearly depleted of their oil. Under the older methods of production these wells were pumped long enough each day to pump the head off and were then shut down. This practice effected a certain power saving and also eliminated the overheating of the stuffing box which occurs when a well is pumped after the oil flow ceases.

In the above method no attention was paid to the retention of the gas in the oil or to the maintenance of a proper fluid level. As a result the production was usually below par.

A case in point is that of Chanslor-Canfield Midway Oil Co.'s No. 2, Section 36, Township 31s, Range 22e, M. D. M.; depth, 1,900 feet; gravity of oil, 20 Baume, 2½-inch pump and tubing. With standard band wheel equipment and a 10-30 horsepower motor this well was pumped two hours daily at eighteen 24-inch strokes per minute. Production, 1.2 bbls. daily. Power cost, 62 cents daily. Volumetric efficiency of pump, about 4½ per cent.

The basic theory as developed in the preceding chapter was applied to this well in the following manner:

An analysis of the oil showed very little gas in solution or occlusion. Hence, the only remaining factor in our theory pertinent to this well was the maintenance of the proper fluid column head. Owing to the fact that the gas in this oil had long ago been dissipated, the force bringing this oil to the well must be either gravity or hydrostatic pressure. In either case the propellant force was small. Hence, it was reasoned that if a minimum fluid column head, consistent with the functioning of the standing valve, was at all times maintained then the oil would keep moving to the well. This in itself ought to show an increase in production. Also, if this oil was constantly moving instead of being dammed during a portion of each day, now drainage channels should be opened up and the well would show an added increase in production. That the theory was correctly applied is proven by the results tabulated below.

Results Recorded

A constant velocity cycle individual pumping unit was installed in place of the standard band wheel equipment. The well was pumped with a 2-horsepower motor 24 hours daily at two and fourtenths 36-inch strokes per minute. Power cost, 24 cents daily. The first day's production was 3.5 bbls. and a gradual increase in production rate of 5.2 bbls. The volumetric efficiency of the pump was between 20 and 30 per cent. This efficiency could have been increased had it been possible to slow up further the pumping speed. This was impossible at the time owing to the fact that the unit was driven by an ordinary leather belt and a further reduction in speed by reducing the size of the motor pulley was impractical.

Another type case was that of Chanslor-Canfield Midway Oil Co.'s No. 20, Section 8, Township 32s, Range 23e, M. D. M. This well was chosen because it was typical of numerous wells in the Midway district. The operating expenses due to oft-repeated repair and cleanout jobs, was exceedingly high and this well was slated for abandonment. However, before abandonment it was decided to ascertain whether under the application of the aforementioned basic theory, this type well could be operated at a profit. The history of the test follows:

With standard band wheel equipment, 10-30 horsepower motor and operated as head well two hours daily at sixteen 24-inch strokes per minute. Production 1 bbl. oil and 4 bbls. water daily. Power and repair cost $5.10 per day over a period of six months.

On February 22, a constant velocity pumping unit was installed in place of the band wheel equipment. A 5-horsepower motor pumped this well 24 hours per day. With a speed of two 36-inch strokes per minute the well produced 2.7 bbls. of oil and 4 bbls. of water. As the

(Continued on Page 172)

*Before California District, A.P.I., Division of Development and Production Engineering, Los Angeles, Calif. June 27.

CALIFORNIA DISTRICT ENGINEERS DISCUSS PRODUCTION PROBLEMS

By L. P. Stockman

LOS ANGELES, Calif., June 29.—The Division of Development and Production Engineering of the American Petroleum Institute held a series of interesting meetings in Los Angeles the week past. These group meetings, which were held under the auspices of the California district, started with a meeting of the national executive committee on June 26. The registration and attendance for all the sessions was especially encouraging to the sponsors as 19 out of the total registration of 200 were from the Mid-Continent and Gulf Coast areas. The technical sessions started early Thursday morning following a brief address of welcome by Chairman A. C. Rubel, chief petroleum engineer of the Union Oil Co. of California. J. V. Kimber of the Pacific Western Oil Co. and C. J. Coberly of Kobe, Inc., who presented "California Casing Practice" and "Latest Developments in Casing and Casing Joints," occupied the entire forenoon of the first day in the presentation of their allotted assignments. The afternoon session, which was held under the auspices of the California committee on production was presided over by Francis Lake of the Union Oil Co. Three papers were presented under this group session and the discussion was quite general indicating considerable interest on the part of those present. J. H. Wallace, production engineer of the Union Oil Co., covered his assignment of "Surface Equipment for Pumping Wells" in a very efficient manner. A. C. Dyer, engineer of the United States Geological Survey at Taft, Calif., covered the "Economic Operation of Small Wells," while H. T. Wyatt, production engineer of the Shell Oil Co. went into considerable detail on "Effective Pumping of Large Capacity Wells."

One of the most interesting features brought out during this session was the use of sucker rod rat holes by the Union Oil Co. of California, the use of which eliminated the usual practice of hanging these stands upright in the derrick. The Union's field engineers conceived the idea some time ago of drilling a rod rat hole on the derrick floor to a depth sufficient to take care of the sucker rods in areas where pulling jobs are quite frequent. The use of these "rod rat holes" eliminates one man on each pulling crew.

Frank F. Schauer Is Not Cut to Pattern

Equitable Vice President's Ways of Doing Things Often Marked by Wide and Enthusiastic Departure from Stereotyped Forms

By Thomas F. Smiley

Frank F. Schauer, vice president and general manager of the Equitable Gas Co., the Pittsburgh & West Virginia Gas Co. and the Philadelphia Oil Co., is different. It is no part of the business in hand to imply that there is any virtue in being different or that there isn't any. The fact that Mr. Schauer is different is set down here without prejudice purely in the interest of historic accuracy.

There's no use expecting things to move along in the same old way after Frank arrives. You may just as well accept the inevitable and make the best of it. Not that he's a mere noncomformist and upsetter. On the contrary he's likely to be the first one to applaud a good suggestion and give it whole-souled support. But don't look for a decorous, stereotyped kind of support. And if Frank himself is offering an idea, don't look for something placid and cut to pattern. Expect wide and enthusiastic departure from the ordinary.

It was Frank, for instance, who founded the Exalted Society of Cockroaches in Pittsburgh, Pa. Nobody else would have thought of creating an order with a name like that. Frank himself was (and presumably still is) the Most Glorious Cockroach, and notwithstanding the fact that membership was secret, it came to be pretty well established that other cockroaches were Harry Adams, Bob Young, Andy Rowley, Art Osterman and Dorr Hartson. As to the organization's objects and ideals, if any, not a whisper ever was allowed to reach the uninitiated. Just how a wondering mortal on the outside was able to determine whether or not he wanted to join the Exalted Society of Cockroaches, and, deciding affirmatively, how he was to go about it to get in, are among earth's unsolved enigmas. Well, that's just like Frank.

Called Him "Happy"

In boyhood Frank accepted the established order of things by attending the grade and high schools in Philadelphia, where he was born in 1880. Then he took special night courses on engineering subjects at Franklin Institute and Temple University in that city. Every school has some boy dubbed "Happy." Frank was it in his school. That tells something about his disposition.

After graduating from high school he got a job as helper in a machine shop at $4 a week. That $4, by the way, was Frank's first concrete reward for linguistic proficiency. The other boys got only $2.50, but Frank could speak German and French in addition to English. German he had learned at home from German-speaking parents. French he had learned in high school. This made him especially helpful in a machine shop where most of the other boys were German, French or Swiss.

Frank stayed in this job a year and a half. Then he got a job as a detail draftsman, having gained a knowledge of this work while he was in high school and while studying at Franklin Institute. Here he got 10 cents an hour, working 52 hours a week. Three months later, when work became slack, two other draftsmen who worked with Frank answered a classified advertisement which they found in a newspaper. Particulars sent to them revealed that the United Gas Improvement Co. was offering $45 a month and use of a bicycle for paving inspectors. This was not sufficiently tempting for the young men who answered the advertisement, for they were getting $12 a week where they were. But they told Frank about it, and he was interested at once. Maybe it was the $45 per. Maybe it was the bicycle. Anyway he took a job as paving inspector, thus beginning his services in the public utility field.

TWO KINDS OF BOSSES BESIDES WIFE

You meet two kinds of bosses in this world, not to mention the wife. One removes much of the mystery concerning the increase in crime. He stirs resentment and hatred, and the workman who succeeds in putting one over on him feels no twinge of conscience.

FRANK F. SCHAUER

The other renews faith in human nature and steadies self-confidence. He creates in his men a desire to give an honest day's work. He helps them to buck up when they show signs of slipping.

Most men have worked under both kinds of bosses at different times and the wonder grows why the first-mentioned type still is found occasionally in modern industrial organizations.

Far-seeing self-interest, apart from any finer consideration, makes the wise employer realize that no man, from the janitor to the general manager, can or will give the best that is in him so long as he is nursing a grievance. A workman brooding over some injustice or surly treatment represents a loss—depreciated property, if you want to put it that way—to his employer, to society and to himself.

There is no surer way of extinguishing latent ability in a man—and this latent ability is an important asset to the one who pays for his services—than to snarl at him for natural mistakes, to withhold the encouraging word and to treat him generally as if he were a member of some lower order of the human species.

This doesn't mean that a boss must be an indulgent, easy-going dolt either. It does mean that he must be a square shooter, that he must practice the golden rule, that he must recognize there are men under his direction who some day may be holding bigger jobs than his own.

All of which was suggested by consideration of certain habits of mind seen in Frank F. Schauer.

Paving inspectors had to be 21 or older. Frank was only 19, but he had an attack of amnesia while he was filling out his application blank and set his age down as 21. A short time later he was made clerk for a street main foreman without change of pay.

With One Company 21 Years

For 21 years Frank remained with the United Gas Improvement Co., working at first as street clerk, gang foreman, general street foreman and shop foreman. In 1904 he was sent to Kansas City, Mo., where he worked as shop foreman, works superintendent and distribution superintendent. In this last-named job he had the use of a horse and buggy and his pay had risen to $150 a month. Frank's father had died in 1900 and the task of keeping up a home devolved upon Frank. In 1907 the artificial gas plant in Kansas City was closed down and natural gas was brought in by the Kansas Natural Gas Co. The United Gas Improvement Co. continued as distributor.

With this change Frank went to Syracuse to serve as an engineer of distribution for the Syracuse Lighting Co., a U.G.I. subsidiary. In 1910 he was sent back to Kansas City to serve as assistant engineer of the distribution system. In the meantime Frank had met Miss Achsah Hawver, who was attending the University of Syracuse, majoring in violin. She had planned to graduate and then to study in Europe. Frank didn't like these plans. He made others for her, in pursuance of which they married.

In 1920 the United Gas Improvement Co. sold its properties in Kansas City, Mo., and Kansas City, Kans. to local interests. Mr. Schauer served as acting engineer for two months, when he went to Pittsburgh as assistant to the general manager of the Equitable Gas Co. Four years later he organized and was made general manager of the General Service Department of the Equitable Gas Co. and the Duquesne Light Co. In 1928 he was promoted to general manager of the Equitable Gas Co., the Pittsburgh & West Virginia Gas Co. and the Philadelphia Oil Co. A year later he was made vice president of the three companies. All of these, along with Duquesne Light Co. are subsidiaries of the Philadelphia Co.

Evidently Thought He Was All Right

Among Mr. Schauer's prized possessions is a gold watch bearing the inscription, "Presented to F. F. S. by K. C. A. C. Morning Class, 1920." The story in connection with that watch is just another reminder of Frank's original way of doing things.

Back in 1918 Dr. Joseph Reilly, athletic director of the Kansas City Athletic Club, had a morning class of 50 members. Twenty-five of these came out early each morning for track exercise and calisthenics.

"I wish we had a swimming pool," remarked Doctor Reilly one day.

"Well, why don't you get one?" responded Frank, as though the acquisition of a swimming pool were almost too trivial a matter for grown men to discuss.

"You know blamed well why," returned the athletic director. "No money." And it was a fact that the organization which now has a handsome 21-story building in the business district of Kansas City was having hard sledding in those days with a modest property at Gillam Road and Thirty-third Street.

Frank devoted a few moments to thought, at the end of which he announced: "We can do it. Here's a bunch of flabby-legged professional men coming around here each morning looking for exercise. Let's give 'em some. We'll just let these birds dig a hole in the ground for a pool. We'll hire a few carpenters to make forms for the concrete lining. That and the concrete work itself are about all we'll have to spend money for. We'll need about $1,000. We can get credit for that. To pay off the debt we'll sell 200 annual pool privileges at $5 each."

And the Scheme Worked Too

The scheme was rather breath-taking in its daring, its suddenness, its simplicity and its completeness, but it looked workable, and Doc Reilly wondered why nobody had thought of it before. He and Frank, without tedious preliminaries, started in to execute the plan. A few mornings later the board of governors beheld a small army of lawyers, doctors, bankers and business men digging away with picks and shovels. They summoned Frank and Doc Reilly, and wanted to know what the hell was going on.

The plans for a swimming pool were laid before them, with the assurance: "You needn't worry. It isn't going to cost you a cent."

"Well, well," said the governors, who though it over a while and then asked that the plans be revised to permit an even better pool than had been projected, with lockers and showers and with provisions for women. The new swimming pool, about 25 by 75 feet, stirred fresh interest in the club's activities. Mrs. Schauer, herself an expert swimmer, served as swimming instructor for a while.

About this time Roc Reilly suffered a fall, breaking a rib. Frank consented to sub for him as leader of the morning class. After the doctor had recovered from his injury he prevailed upon his friend to continue as leader. When Frank announced that he would have to leave K. C. the morning class did its best to show what it thought of him.

Mr. Schauer's interest in athletic continued and in Pittsburgh he is a member of the Pittsburgh Athletic Association and the Keystone Athletic Club. He had been a deputy commissioner of Boy Scouts in Kansas City and he still devotes much time to this organization in Pittsburgh, where he is a Scout commissioner. As a licensed professional engineer Mr. Schauer was secretary and vice president of the Engineers Society of Kansas City, and he is a member of the Engineers Society of Western Pennsylvania.

Active in Civic Affairs

Always active in civic movements, Mr. Schauer is a member of the Pittsburgh Chamber of Commerce. He also is a member of the advisory committee of the Salvation Army in Pittsburgh and is a Mason.

Mr. Schauer will have it that he did postgraduate work in various institutions of learning, breaking speed records in the

(Continued on Page 168)

"Oil Well" Announces Changes in Personnel In Big Organization

Effective July 1, the Oil Well Supply Co. has announced a number of changes in its personnel as well as a partial reorganization of its distribution territories. The changes followed a meeting of the board of directors on June 26.

The sales districts formerly known as South Texas, North Texas, Mid-Continent, Rocky Mountain and Calgary have been consolidated and will be known as the Midwest Division with headquarters at Tulsa, Oklahoma. The new division will be headed by H. J. Morlang, formerly district manager at Fort Worth, Tex., and newly elected vice president of the company.

J. M. Post, formerly district manager at Tulsa, in charge of the Mid-Continent district, has been transferred to Oil City, Pa., as district manager in charge of the eastern stores.

J. J. Durst, formerly manager of the Rocky Mountain district, with headquarters at Denver, Colo., has been transferred to Tulsa as division manager of the new Midwest division.

Frank L. Wiegand, formerly in charge of the South Texas district with headquarters at Shreveport, La., has been transferred to Tulsa to take charge of inventories and merchandise.

E. H. James, vice president and treasurer, has been designated as vice president in charge of manufacturing, with headquarters at Imperial Works, Oil City, Pa., where he will spend approximately one-half of his time. The balance of his time will be spent in Pittsburgh, where he will continue for the present as treasurer of the company.

The engineering department and the purchasing department have been transferred from Pittsburgh to Imperial Works, Oil City, Pa. E. E. Grove heads the engineering department as chief engineer and H. S. Charnell the purchasing department as purchasing agent.

The order and stock control departments, formerly located at Pittsburgh, have been consolidated and transferred to Oil City, Pa. The consolidation will be in charge of H. E. Hamilton who will be located at Imperial Works, Oil City, Pa., with the title of manager of sales, manufacturing division.

The insurance department of the company has been absorbed by the legal department, headed by E. W. Criswell, secretary, with headquarters at Pittsburgh, Pa.

H. D. Wilson, formerly of the Wilson-Snyder Manufacturing Co., was elected to the board of directors to fill a vacancy caused by the resignation of A. B. Sheets.

SPECIAL RATES MADE FOR OIL EXPOSITION

All the railroad passenger associations in United States have agreed to special rates for those attending the Sixth International Petroleum Exposition and Congress to be held at Tulsa October 5 to 12, according to an announcement by A. F. Winn, traffic manager of the Skelly Oil Co. Mr. Winn, who has been appointed chairman of the Special Trains Committee of the Exposition, announced the special rates at a meeting of the committee Tuesday. The rates will provide 1½ fare for round-trip tickets with a 1 1-3 fare for some close-in points.

The committee at its meeting Tuesday outlined plans for special train service from several points. W. B. Way, general manager of the Exposition, stated that the interest already shown pointed to a record-breaking attendance this year.

Railroad executives from all parts of the country will be the guests of the Tulsa Chamber of Commerce and Exposition officials in a meeting to be held in Tulsa July 19. At that time additional plans will be discussed for the special train service. B. E. Horrigan, Tulsa, is in charge of arrangements for this meeting.

In addition to Mr. Winn the following are members of the Special Trains Committee:

E. W. Wilson, Frick-Reid Supply Corp.; C. O. Willson, The Oil and Gas Journal; V. H. Smith, Gulf States Terminal & Transport Co.; B. E. Horrigan; H. L. Armstrong, Skelly Oil Co.

Ex-officio Committee: Chester Bodley, Pennsylvania R.R.; J. E. Payne, Frisco R.R.; C. E. Egdorf, M.K.&T. R.R.; J. S. Rollman, Santa Fe R.R.; O. M. Green, New York Central R.R.; L. A. Davis, B.&O. R.R.

CONSUMPTION SHOWS BIG GAIN IN BUREAU OF MINES REPORT FOR MAY

WASHINGTON, D. C., July 2.—According to reports received by the Bureau of Mines, Department of Commerce, the production of crude petroleum in the United States during May totaled 84,415,000 bbls., a daily average of 2,723,000 bbls. This constitutes a new high record both for total and daily average. It also represents an increase of 12 per cent over May, 1928.

The increased production in Texas, which again raised the daily output to a new record of over 800,500 bbls., was mainly responsible for the gain in national output. Daily average production in California showed little change from the previous month but that of Oklahoma increased 15,000 bbls. to slightly over 700,000 bbls. The production of Kansas reached a new high level as production in the Sedgwick district continued to increase. The majority of the other producing states increased, the two most notable exceptions being Arkansas and Louisiana. The growing demand for crudes from the eastern states has resulted in a steady growth in output over the last half year and in May the combined daily average production of all nine states amounted to 125,000 bbls. per day, the highest since 1921.

During May stocks of crude at refineries increased about 800,000 bbls. Stocks at other places east of California decreased nearly 2,000,000 bbls., a net decline of about 1,200,000 bbls. This was more than compensated, however, by increase in both light and heavy stocks in California. Stocks of all oils on May 31 amounted to 653,529,000 bbls., an increase of 3,726,000 bbls. over the April total. Of this increase about 2,750,000 bbls. was in crude stocks, 800,000 bbls. in refined products, and the remainder in natural gasoline stocks.

Runs to stills continued to establish new peaks in May when a daily average of 2,723,000 bbls. of crude was processed. The total of crude runs to stills in May exceeded production by 5,000 bbls.

Gasoline production continued to set new high records, and in May the daily average attained a peak of 1,170,000 bbls. This represents an increase of 18 per cent over May, 1928. In spite of the Rapid growth in gasoline production, stocks decreased nearly 2,400,000 bbls. and amounted to 44,648,000 bbls. on May 31. The daily average indicated domestic demand for gasoline in May works out to be 1,101,000 bbls., an increase over May, 1928, of 20 per cent. At the current rate of total demand, the gasoline stocks of May 31 represent 35 days' supply as compared with 39 days' supply on hand a month ago and 35 days' supply on hand a year ago.

Little change of consequence was recorded in the statistics of the minor refined products in May. Exports of wax declined and stocks again increased. Stocks of fuel oil east of California continued their seasonal increase.

The refinery data of this report were compiled from schedules of 342 refineries which had an aggregate daily recorded crude oil capacity of 3,375,000 bbls. These refineries operated during May at 81 per cent of their recorded capacity, given above, as compared with 335 refineries operating at 80 per cent of their capacity in April. This report was prepared under supervision of G. R. Hopkins, petroleum economics division, and E. B. Swanson, acting chief economics.

INSTITUTE MARKS TIME ON CONSERVATION PLAN

NEW YORK, July 1.—Pending announcement of the details of the next conference on oil conservation, now being worked out by Mark L. Requa, chairman of the recent meeting at Colorado Springs, the American Petroleum Institute does not contemplate initiating any new plan. This was decided at the June meeting of the board of directors of the Institute held June 28 at the Institute's offices, 250 Park Avenue.

The report of the committee which attended the Colorado Springs convention was presented and received without comment.

The directors again discussed the community development of new pools and wildcat acreage, and the subject was presented in a conversational manner, there being no official action taken.

A favorable topic of discussion, state taxation of gasoline, was brought before the meeting. The Institute firmly opposes gasoline taxes any part of which is diverted to use other than for highway purposes. It also firmly opposes taxation of gasoline when the rate of taxation is out of proportion to the amount involved. The board heard with pleasure that several automobile associations and other bodies identified with the automotive industry have expressed a desire to join with the American Petroleum Institute in its campaign against such taxation. The Institute does not hold against a fair tax on gasoline when such tax receipts are used for the purpose intended, namely, to defray the cost of upkeep and new construction on the highways used by the motorists who pay the tax. Such a tax is fair, the Institute believes.

RUSSELL C. STAMETS IS MADE DISTRICT MANAGER

Russell C. Stamets, who was with the National Tube Co. for 17 years and with the Oil Well Supply Co. for nine years, has been made manager of the Tulsa district of the Oil Well Supply Co. and has assumed his duties in the Tulsa headquarters of the company.

Mr. Stamets joined the Oil Well Supply

Russell C. Stamets

Co. in 1920 and was in charge of tubular goods in Pittsburgh until his recent promotion. He started with the National Tube Co. at the age of 18 in the humble position of loading pipe and when he joined the Oil Well Supply Co. had gone through a practical experience which had taken him into almost every department of the pipe company's big mills.

MORLANG IN CHARGE OF CONSOLIDATED DIVISION

At a meeting of the board of directors of the Oil Well Supply Co., Harry J. Morlang, formerly manager of the North Texas district, with headquarters at Fort Worth, Tex., was elected as vice president. Mr. Morlang will have charge of

Harry J. Morlang

all of the company's affairs between the Mississippi River and the Rocky Mountains, including western Canada.

The Oil Well Supply Co.'s activities were formerly divided into South Texas, North Texas, Mid-Continent and Rocky Mountain district, with Canadian headquarters in Calgary, Alberta, Canada. Under new arrangement these districts will be consolidated into one division, known as the Midwest division, of which Mr. Morlang will have supervision. Headquarters for this division will be Tulsa.

Mr. Morlang has been with the Oil Well Supply Co. for a number of years, of which the last 11 have been spent as manager of the North Texas district, with offices at Fort Worth. Prior to coming to Fort Worth he was district manager in Illinois.

OKLAHOMA CITY GETS GYPSY'S FIELD OFFICE

The Gypsy Oil Co. has moved its Shawnee office to Oklahoma City.

R. V. Rushmore, who has been in charge of their Shawnee office, will continue to be in charge at Oklahoma City. The territory under jurisdiction of the Oklahoma City office has been extended. The land, geological and production departments will be centralized there to cover Ada, Allen, Chickasha, Central Oklahoma and Western Oklahoma.

J. T. Richards, district geologist, will have R. L. Voss as associate. Jack Adams and Wesley Coughron, scouts, will have headquarters at the new office. Miss Olive McDermitt will continue as secretary to Mr. Rushmore.

In making the change, James Cobb, who has been working out of Holdenville, will be transferred to the Shawnee district. C. R. Clark, geologist, goes from Shawnee district to Ada. H. W. Galey of the land department will remain at Shawnee.

WESTINGHOUSE PRESIDENT

F. A. Merrick, vice president and general manager, has been elected president of the Westinghouse Electric & Manufacturing Co. by the board of directors of the company. In announcing the election of Mr. Merrick to the presidency of the company, A. W. Robertson, chairman, also stated that the board of directors, while accepting the resignation of E. M. Herr, president since 1911, in order that he might go on an extended vacation, had elected Mr. Herr vice chairman.

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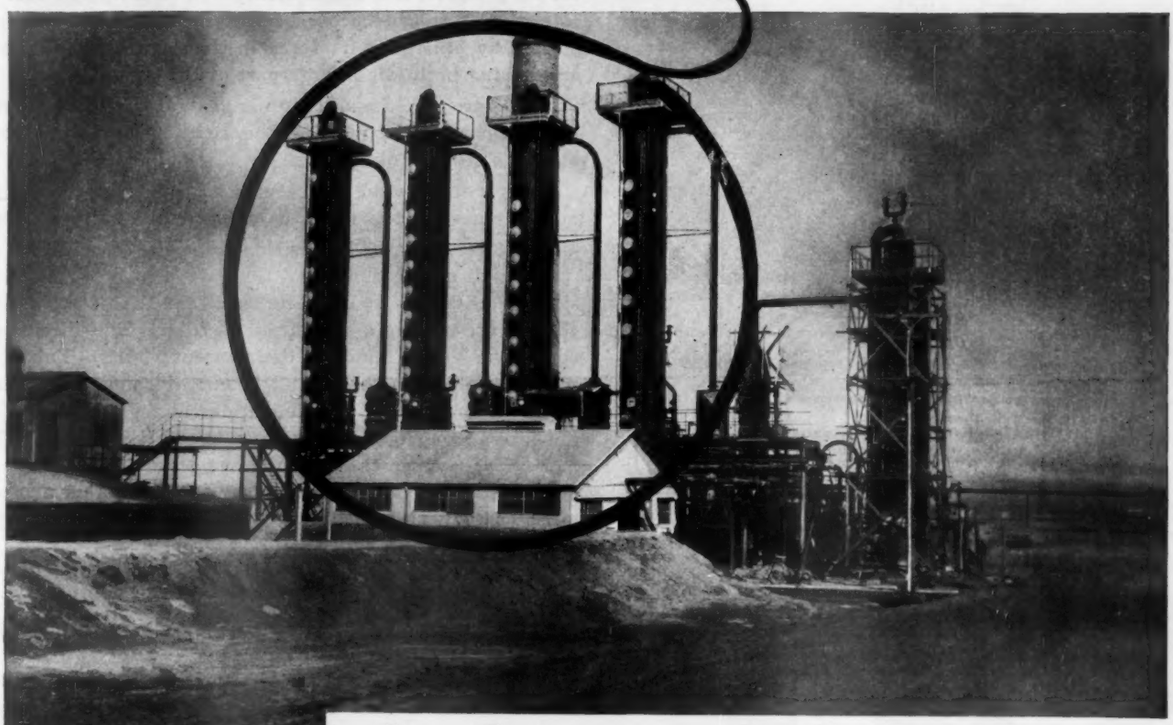

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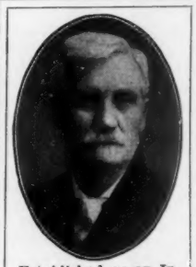

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CHAIN MERCHANDIZING

The oil industry appears as far from solving its marketing problem as ever.

Although the motoring public could be served just as conveniently with one-third the number of stations and one-third the investment in gasoline outlets new stations are springing up on every side.

The theory that a solution might be found by the manufacturers controlling their distribution through company-owned stations has been given a trial and in itself it is apparent it has not been a complete remedy.

It put larger capital back of station building projects and stimulated oil company competition in expansion programs that dwarfed anything that had gone before.

And all this in the face of general agreement that station building was overdone, that each additional station simply reduced the average available gallonage and that there was no chance whatever of a reasonable return on the investment.

The taking over of individual stations by the larger marketing units did not seem appreciably to lessen the superfluity of stations and certainly did not offset the new building.

The conditions disclosed in a survey of the marketing situation in Tulsa, published in this issue of The Oil and Gas Journal, may be taken as representative of conditions in practically all the larger consuming centers of 50,000 population and over.

Here is a community of 170,000 population (government census report) with 42,000 cars and a consumption of 25,550,000 gallons of gasoline annually and a gasoline pump for every 48 cars.

It is estimated that the investment in bulk and retail service stations in Tulsa to take care of this market is in excess of $5,000,000, a sum greater than the entire gross revenue from the sale of gasoline and motor oil during the year.

The labor costs alone are estimated close to $1,000,000 and this, added to a six per cent return on the investment would aggregate a charge of 5 cents per gallon on the yearly gallonage of gasoline.

There is no other staple commodity that is marketed with such wasteful distribution as gasoline.

The oil industry has the chain system in form but employs neither its principle nor its method.

The chain stores thrive by eliminating wastes and lowering costs. The gasoline industry keeps adding to its investment in distribution, constantly increasing its costs without any corresponding return.

The effect is just the same as though a manufacturing concern kept on enlarging its producing capacity without any larger demand for its products and consequently had to carry the cost of so much idle plant. It can hardly be imagined that it would add to that burden by enlarging its force in proportion to the plant addition and having both idle a large part of the time.

Realization of the situation is general but there is nothing practical being done about it. The attitude is that the other fellow ought to stop building.

That would be the logical way of remedying conditions, to quit building new outlets until the demand necessitates expansion.

Unfortunately the disposition to let the other fellow do it means that it will not be done.

One other remedy suggests itself and that is the adoption of the chain store principle as well as its form. The Firestones outlined something of the kind on their recent visit to Tulsa, when plans were revealed for the establishment of combination tire and gasoline, oil and battery service stations under one roof.

A beginning on a major scale is about to be made by some oil marketing companies along the same line, by adding to the usual service station equipment lines of tires and other accessories, ultimately presumably to be expanded into a complete service for the motoring public in super-stations.

The advantages of such a combination in spreading the investment cost per unit of product sold and in furnishing profitable employment for station forces not now gainfully employed during a large part of the time are obvious.

The gasoline station of today has on the contrary, under stress of competition, added in most cases only services for which it gets no direct return but which have increased the cost of operating the stations.

There is no other merchandizing system of such widespread scope which gives the public so much free service that costs real money and yet fails to reimburse itself through adding to its line of merchandise.

The original sale of kerosene and gasoline as sidelines at various stores suggests that perhaps the time has come to turn the tables and that the thousands upon thousands of gasoline stations might find it profitable to embark on sidelines of their own to earn a fair return on their investment and keep their sales forces occupied.

The idea may be worth looking into. It is the course that is being followed by all other merchandizing systems operating on the chain principle.

We have seen cigar store chains developing lunch counters and soda fountains; drug store chains constantly extending their lines in one direction or another. The gasoline chain has been sticking steadily to its own products and what additions it has made have been largely in the form of free service to its customers.

It can be readily understood that oil men will have a preference to limit their enterprise to the business in which they are engaged but when they have expanded their outlay to where the investment far outweighs the possible return they may be obliged to follow the example of other chain systems and seek reimbursement where they can find it.

It might add an undesired complication but if it substituted profit for loss on an overextended investment it might be worth considering.

So long as the industry insists on building more stations than are needed and in investing more money in distribution than the returns from the exclusive sale of gasoline and oil can justify it will have to find some way of getting through.

The simplest and direct remedy for existing conditions would be to quit building stations until the present supply proves inadequate for the future demand. The situation is serious enough to invite the united attention of the industry not as something the other fellow should do but that everyone should study for himself.

DRESSER Couplings

Below is shown a typical 22″ Dresser Installation. It is a 300 mile line recently completed in East Texas. When tested at 400 pounds pressure, there was not a single case of Coupling trouble.

S. R. Dresser Manufacturing Company
Bradford, Penna.

DOMINATE

Outlines Causes of Vapor Locking

Relation Between Atmospheric Temperatures and Operation of Motor Discussed With Respect to Motor Fuel Volatility

By George Granger Brown
University of Michigan

The effective volatility of a motor fuel depends not only upon the fuel characteristics but also the dimensions and form of the manifold and the carburetor, and to even a greater extent upon the speed at which the motor is operated. The motor on which the above tests were made is a conventional 6-cylinder motor carrying a manifold composed of a horizontal tube which is unheated and a vertical riser from the carburetor which is heated by exhaust gases. In many ways this type of manifold may be taken as representative of present practice, and the results obtained therein may be taken to indicate the relative effective volatilities of the different fuels in modern motors, although the absolute values may be different for different motors and manifolds.

During the next few months we expect to investigate in at least a preliminary manner the effect of engine speed and manifolding on the effective volatility of these fuels which have already been investigated. Until this information is available the following suggestions must be relied upon to indicate the relation between engine performance and fuel volatility.

Effective Volatility

If the motor is to be driven without the use of a choke the effective volatility of the fuel must be sufficient to deliver at least an explosive mixture to the cylinder under all conditions of operation. If we assume the carburetor to be adjusted to deliver a 12 to 1 air-fuel ratio at the lower end of the manifold it is evident that the effective volatility of the fuel must be not less than 60 per cent in order to supply a mixture not leaner than 20 to 1 to the cylinders. In most cases 60 per cent effective volatility in a 12 to 1 air-fuel ratio is indicated by about 55 to 60 per cent on the equilibrium volatility curve, which is apparently dependent upon the corresponding points of the A.S.T.M. distillation. Therefore the 55 to 60 per cent points on the A.S.T.M. distillation are important in indicating the minimum temperature of the mixture at which the car may be operated without use of the choke provided the carburetor supplies an air-fuel ratio of about 12 to 1.

Most modern cars are equipped with carburetors supplied with accelerating wells which inject an additional charge of fuel into the manifold whenever the throttle is suddenly opened. The effect of these accelerating wells is to deliver a mixture ratio of about 8 to 1 during acceleration when the carburetor is adjusted to supply a 12 to 1 air-fuel ratio under steady conditions. As 60 per cent effective volatility in an air-fuel ratio of 8 to 1 indicates a 13 to 1 air-fuel ratio burned in the cylinders, the direct effect of these accelerating wells is to enable the fuel to give almost perfect performance as soon as that manifold temperature has been reached at which the fuel is 60 per cent effectively vaporized.

Use of Choke

Taking into account the effect of these accelerating wells we find that about 45 per cent effective volatility will just allow the car to be operated without use of the choke if the carburetor supplies an air-fuel ratio of 8 to 1 during the accelerating period. However, motor performance will be highly unsatisfactory and the driver would certainly use the choke in order to obtain better response from his motor.

If the choke is used to enrich the mixture and the fuel possesses 40 to 45 per cent effective volatility the driver can obtain satisfactory performance when the choke is set so that the carburetor delivers an 8 to 1 air-fuel ratio under steady conditions and a ratio of about 5.4 to 1 during the accelerating period. Under these conditions a mixture ratio of about 13 to 1 will be supplied during the acceleration period and a mixture ratio of about 8 to 1 will be supplied when driving under steady conditions. If the fuel does not possess 40 per cent effective volatility the driver will find it necessary to further enrich his mixture in order to obtain satisfactory acceleration. As soon as this is done, however, the air-fuel ratio supplied under steady driving will be so rich as to be non-explosive and the driver will find it necessary to vary the choke position depending upon the speed of the car and the way he handles the throttle.

This leads to the conclusion that a fuel must possess at least 40 per cent effective volatility if the car is to be driven in a satisfactory manner with resort to the choke and at least 60 per cent effective volatility if the car is to be driven without use of the choke. Sixty per cent effective volatility is indicated by 55 per cent equilibrium volatility (air distillation) and the 40 to 45 per cent effective volatility in an 8 to 1 air-fuel ratio is indicated by the 10 per cent point on the equilibrium air distillation curve. Apparently the 55 per cent point and the 10 per cent point on the equilibrium volatility curve are approximately related to the corresponding point on the A.S.T.M. distillation. Therefore the 10 per cent point on the A. S. T. M. distillation determines the minimum mixture temperature at which the car may be operated in a reasonably satisfactory manner when the choke is used, and the 55 per cent point indicates the minimum temperature of the mixture at which the car may be operated satisfactorily without resort to the choke. As long as carburetors are equipped with accelerating wells, the important range on the A.S.T.M. distillation so far as engine performance is concerned is that part between 10 and 55 or 60 per cent vaporized.

Minimum Temperature

Leaving out of the discussion for the present any question as to crank-case dilution, we may state with a good deal of confidence that the 10 per cent point on the A.S.T.M. distillation is the most important single point on the curve, because it indicates the minimum temperature at which the car may be started and driven by use of the choke. Next in order of importance is the 35 per cent point because it indicates the temperature of 55 per cent effective volatility or about the mixture temperature at which most drivers are content to drive without use of the choke. The 55 or 60 per cent point indicates the minimum mixture temperature at which the car may be driven in an entirely satisfactory manner without use of the choke and is therefore important in indicating performance when the motor is warmed up or in warm weather operation. These statements may sound familiar to you but are now well supported by careful experimental work reported above and now in progress and are believed to be essentially correct although contrary to the opinion held by some competent refiners and engineers.

I believe the importance of fuel characteristics in determining crank-case dilution has been overstated at least for the modern motor car. If any commercial motor fuel is satisfactory from the standpoint of crank-case dilution any other commercial product will also prove satisfactory under the same conditions of use; and if any commercial motor fuel prove unsatisfactory so far as crank-case dilution is concerned any other commercial product will also prove unsatisfactory under the same conditions of use.

Relation Between A.S.T.M. Distillation and Motor Performance

In Figure 1 the A.S.T.M. distillation temperature is plotted as a function of the mixture temperature to indicate 45, 55, and 60 per cent effective volatility corresponding respectively to satisfactory operation when using the choke, fairly satisfactory operation without using the choke and entirely satisfactory operation without use of the choke on modern cars whose carburetors have accelerating wells. Figure 1 is based on throttle response at an initial speed of about 300 revolutions per minute. At higher motor speed equivalent performance will be obtained at lower mixture temperatures. This is one phase of the work not yet completed.

SUMMARY OF DR. BROWN'S WORK

Four articles have been prepared by Doctor Brown summarizing his work at the University of Michigan as part of the research program of the Natural Gasoline Association of America. The first of these appeared in The Oil and Gas Journal, February 28, 1929, the second on March 7 and the third on June 20.

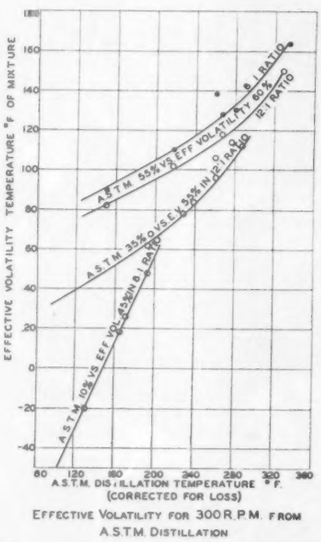
EFFECTIVE VOLATILITY TEMPERATURE °F OF MIXTURE
A.S.T.M. DISTILLATION TEMPERATURE °F.
(CORRECTED FOR LOSS)
A.S.T.M. 55% VS EFF. VOLATILITY AT 60% 12:1 RATIO
A.S.T.M. 35% VS EFF. VOLATILITY AT 45% 8:1 RATIO
A.S.T.M. 10% VS EFF. VOLATILITY AT 45% 8:1 RATIO
EFFECTIVE VOLATILITY FOR 300 R.P.M. FROM A.S.T.M. DISTILLATION

Figure 1—Correlation of volatility and A. S.T.M. distillation data.

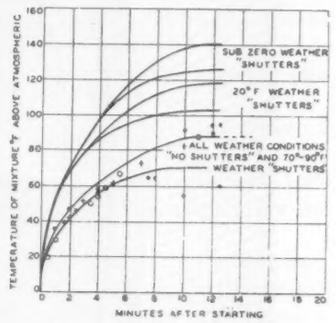
TEMPERATURE OF MIXTURE °F ABOVE ATMOSPHERIC
SUB ZERO WEATHER "SHUTTERS"
20° F WEATHER "SHUTTERS"
ALL WEATHER CONDITIONS "NO SHUTTERS" AND 70°-90° F WEATHER "SHUTTERS"
MINUTES AFTER STARTING

Figure 2—Acceleration curves.

In order that the data may be interpreted in terms of atmospheric temperature, the result of a number of tests not yet completed are summarized in Figure 2 which shows the mixture temperature at various time intervals after starting the motor as a function of the atmospheric temperature. These tests include cars equipped with thermostatically controlled radiator shutters and also cars not so equipped. In general the mixture temperature in the manifold varies almost directly with atmospheric temperature when the car is not equipped with radiator shutters. But when so equipped the mixture temperature runs considerably higher in cold weather than is the case on cars not supplied with shutters. It should be pointed out that the temperature of the mixture fluctuates within wide limits depending upon driving conditions. After driving at a high speed for some minutes and suddenly slowing down, or stopping the motor, the mixture temperature may go to 220 degrees Fahrenheit even in cold weather. Likewise when accelerating from a lower to a higher speed the mixture temperature drops as much as 40 or possibly 60 degrees Fahrenheit. However this same drop in temperature occurs in the laboratory tests upon which these results are based so the relationship indicated in Figures 1 and 2 may be used with considerable confidence when applied to throttle response at a

(Continued on Page 193)

TABLE 1—SUMMARY OF VAPOR LOCK TESTS ON REPRESENTATIVE FUELS

	740 m.m.							900 m.m.					
										Vacuum tank or gravity feed		Pressure feed	
Fuel—	740 m.m. zero vapor space	Bubbles first observed	10% vapor space	20% vapor space	Evidences lean mixture	Reid vapor pressure 740 m.m.	Vapor liquid =2/1	Reid vapor pressure at 100°F	First evidence possible trouble	Definite vapor lock	Definite vapor lock	First evidence of vaporization (at 3lb gauge pressure)	Vapor liquid =2/1	Reid vapor pressure 17.3lb
2	73°F	100°F	100°F	115°F	101°F	156°F	145°F	6.2lb	145°F	154°F	none	164°F	162°F	171°F
35	72	100	97	104	105	147	122	6.75	130	139	none	160	138	160
37	72.5	90	95	104	105	129	122	8 6	125	130	140°F	160	137	141
57	68	80	89	98	100	126	113	9 25	115	125	135	†143	126	139
58	76	90	97	108	108	152	131	6 4	140	160	none	180	146	166
1,041	76	82	95	102	104	133	122	8.5	120	128	140	166	139	147
1,042	48	62	73.5	82	90	114	102	11.75	110	*116	120 140	106 †116	117	128
1,043	36	64	54	63	105	107	89	13 1	104	*109	140	115	102	124
1,044	78	82	91	101	100	133	121	8.2	121	144	153	140	136	146

*Could not exceed 40 miles per hour. †3.2-pound gauge.

Announcing

PRODUCTS

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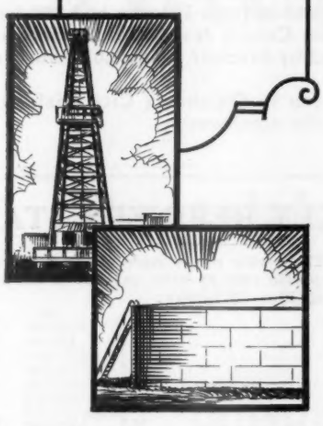
Stills
Steel Plate Construction



THE KIRK-MORROW IRON WORKS COMPANY

Formed to take over the Iola, Kansas, plant of the United Iron Works, Inc.

We are pleased to announce to our friends and to the friends of United Iron Works oil field products, that we have formed the Kirk-Morrow Iron Works Company and have taken over the Iola plant of the United Iron Works, Inc.

As is well known, the Iola plant has been United's "oil industry equipment" plant, this plant having in the past few years totalled a volume of oil field sales of approximately $3,000,000 per year. The new company will engage exclusively in the manufacture of oil field equipment, specializing in the types of equipment that have been formerly produced and in steel derricks.

In taking over the Iola plant, we have also taken over the oil industry warehouses and the entire manufacturing, sales, field and warehouse personnel which has been serving this plant.

Plant and general offices will remain in Iola. Three sales offices, twenty-two warehouse branches, and a large field personnel will enable us to offer the industry a highly efficient service in the Mid-Continent and Rocky Mountain fields.

J. B. KIRK
D. C. MORROW

PERSONNEL OF THE KIRK-MORROW IRON WORKS COMPANY

J. B. Kirk, A. S. M. E., President of the new organization, has operated for many years in Kansas oil and gas fields and is widely known throughout the entire Mid-Continent field in both business and personal relations.

D. C. Morrow, Vice-President and General Manager, was for twenty-six years an official of the United Iron Works, Inc., being president of that company at the time of the formation of The Kirk-Morrow Iron Works Company. Mr. Morrow is in charge of the manufacturing and sales departments of the new company. He will have offices in both Iola, Kansas, and Tulsa, Oklahoma.

F. J. Bradford and V. H. Van Horn are in charge of sales of rig iron equipment. Mr. Bradford has had 25 years experience in the manufacture and sale of his specialty.

W. H. Dwyer and H. M. Rosevear are in charge of the sale and erection of tanks. Mr. Dwyer is in charge of the company's Dallas office. Mr. Rosevear is stationed in Tulsa.

THE KIRK-MORROW IRON WORKS COMPANY

General Offices: IOLA, KANSAS

Sales Offices: Hunt Bldg., TULSA, OKLA.; Magnolia Bldg., DALLAS, TEXAS; Brown Bldg., WICHITA, KANS.

WAREHOUSE BRANCHES:

KANSAS—Valley Center, El Dorado, McPherson. OKLAHOMA—Maud, Seminole, Sasakwa, Tulsa, Oklahoma City
TEXAS—Big Spring, Borger, Pampa, Panhandle, Pyote, Trent, Santa Rita
ARKANSAS—El Dorado, Smackover. WYOMING—Casper, Parco, Cody

CANADA: Okotoks, Alberta.

Late News from the Field

MICHIGAN

MUSKEGON, Mich., July 2.—A small producer and a dry hole, both completed in the Dundee formation, indicated the east and west limits of the Mount Pleasant Field. The small producer was the Pure Oil Co.'s No. 1 Fred Sias, NW NE Section 17-14n-2w, Greendale Township, Midland County. It came in at 3,533-82 feet, making between 75 and 100 bbls. initial daily flow. The dry hole was the South Bend Syndicate's No. 1 John McNeal, NE Section 9-14-3, Chippewa Township, Isabella County, which struck bottom salt water at 3,795 feet, about 200 feet lower than producers in the proven field.

The two wells are located about 2 miles east and west, respectively, of present production. They indicate that the Central Michigan Field will not exceed 5 miles in length east and west and other wells indicate 3 to 4 miles as the probable width of the field north and south. Total daily production of the field is now reported to be more than 3,000 bbls.

GULF COAST

HOUSTON, Tex., July 2.—Moody Corp.'s No. 1 Herman estate on the southwest side of Jierce Junction was completed Monday flowing 1,400 bbls. of pipe line oil from a sand at 4,689 feet. The oil tested 31.5 gravity at 28 degrees. South Texas Petroleum Co.'s No. 5 Morris, Humble deep sand pool, was brought in Monday flowing an estimated 2,500 bbls. daily from sand at 5,154 feet. Mission Drilling Co.'s No. 1 Huddleston, Refugio, extended production of the field 2,000 feet east when it came in Monday flowing an estimated 450 bbls. of pipe line oil from sand at 3,642-53 feet. The well has a pressure of 200 pounds through a quarter-inch choke. Humble Oil & Refining Co. and Valley Oil Corp.'s No. 2-A Bracey, Raccoon Bend, made a 500-bbl. well at 3,559 feet.

OKLAHOMA

The Signal Oil Co.'s No. 1 Bond, SW NE Section 13-6-7, southeastern part of Seminole County, a mile and a half from the nearest production, found the Wilcox sand at 4,162-62½ feet. The first two hours it mad 177 bbls., the first 15 hours 740 bbls., and is now making 60 bbls. an hour.

Prairie Oil & Gas Co., Tom Slick Oil Co. and Phillips Petroleum Corp.'s No. 1 Sudick, C NE NE Section 8-10-2w, Cleveland County, found the top of the lime at 6,288 feet and was still drilling in it at 6,853 feet. The test is 6 miles southeast of the Oklahoma City Field and is the deepest drilling test in the area.

Independent Oil & Gas Co.'s No. 1 Pappen, NE SE SE Section 16-7-4, Pottawatomie County, flowed 973 bbls. from the Hunton lime at a total depth of 3,890 feet.

McCulloch Oil Co.'s No. 1 Powell, NW cor. Section 11-6-5, a wildcat test in the southwestern part of Seminole County, is being abandoned at a total depth of 4,552 feet in Wilcox sand.

Mid-Continent Petroleum Corp.'s No. 8 Smith, SE SW NE Section 5-7-7, Seminole County, in the southeast extension of the Little River Pool, made 4,440 bbls. from the Wilcox sand at 4,239-48 feet. The total production of the lease for July 1 was 12,125 bbls. from five producing wells.

Shell Petroleum Corp.'s No. 1 Holotka, SW NE SE Section 7-6-8, Seminole County, the second producing well in the new pool opened by the Sinclair Oil & Gas Co. a short time ago, made 1,631 bbls. on the gauge of July 1. It is making its production from the Wilcox sand at 4,193-96 feet.

Carter Oil Co. has completed its No. 8 Durant, SW SE NE Section 18-16-9, Creek County, in the Dutcher sand at 3,015-16½ feet, for 450 bbls. The well was deepened from the Bartlesville sand, from which it had been producing for several years. Selby Oil & Gas Co.'s No. 5 Durant, NW NE SE NE Section 18-16-9, the south offset to the Carter Oil Co.'s well found the Dutcher sand 3,024-28 feet, and it was making 36 bbls. an hour on the gauge of July 1. This makes the third Dutcher sand well producing in the pool at this date, all the rest of the production coming from the Bartlesville sand.

The total production from the six producing wells in the Oklahoma City Field on the gauge of July 2 was 16,897 bbls. This total includes the gasoline well of the Sinclair Oil & Gas Co., which made 1,660 bbls., and also the Mid-Kansas Oil & Gas Co.'s No. 1 Fortson, which was producing 55 bbls. a day while drilling deeper.

WEST TEXAS

FORT WORTH, July 2.—Howard and Glasscock Counties potential has dropped 10,259 bbls. Monthly report by umpire shows the potential of the field as 56,476 bbls., compared with 66,735 bbls. last month. Winkler potential is cut to 746,137 bbls., a drop of 298,498 bbls. Only four wells were tested.

CALIFORNIA

LOS ANGELES, Calif., July 2.—Engineers tapped the oil string in York and Lockhart's burning well at Santa Fe Springs and 900 bbls. of oil and 1,000,000 feet of gas is being recovered through subterranean tunnel daily. Flames have not shown any very great change, and it will require several more lines before cone can be dropped over mouth and well capped.

Lincoln Drilling Co.'s No. 1 Williams, near Summerland Field of Santa Barbara County, looks like new possible discovery as company has been forced to kill gas flow by using 25 tons of hematite.

KANSAS

Producers & Refiners Corp.'s No. 1 Kuske NW NE Section 24-25-1e Sedgwick County, filled up and slopped over in 12 hours from chat at 3,023-17 feet. The well is an offset to the Barnsdall Oil Co.'s No. 1 Samuel, which was completed a short time ago in chat and was later drilled deeper. On the report of July 2 the well was flowing 5 bbls. an hour.

Prairie Oil & Gas Co. and Tom Slick Oil Co.'s No. 1 Sellans, SW SE Section 36-15-13w Russell County, wildcat, swabbed 221 bbls. on the gauge of July 1 and has 2,500 bbls. of oil in storage and only 500 bbls. of room left.

The Shell Petroleum Corp.'s No. 1 Reitz, NW SE SW Section 1-20-2w, McPherson County, the latest wildcat to make oil, has been pinched in to 50 bbls. an hour while the company is erecting more tankage. The well is flowing into the slush pit as all available storage on the lease is full. The oil is coming from chat at 2,935-67 feet.

FRENCH OIL PRODUCTION

Crude oil production in France, amounting to 500,000 bbls. annually, is only a small percentage of the 15,000,000-bbl. annual demand. Production comes from Pechelbronn, the only oil field in France, but hopes are entertained for the eventual development of fields in a number of colonies, particularly Algeria, Tunis, Morocco, and Cameroun, where drilling is being carried on, in Madagascar where rich bitumen deposits suggest the presence of oil, in New Caledonia where traces have been found by foreign companies, and in Syria. Experts believe that the oil formations under Mosul, in Mesopotamia, extend under the neighboring Syrian territory over which France holds a mandate.

High Spots in Field News

NORTH LOUISIANA

Richland Parish has biggest gas well in field, 70,000,000 feet.

SOUTHWEST TEXAS

Tests for oil in Carolina-Texas and Driscoll Fields come in big gassers.

WEST TEXAS

Three-quarters of mile extension to southwestern end of Yates Pool.

Showing of oil in deep wildcat in Mitchell County.

Yates proration continued and increased to 130,000 bbls.

MICHIGAN

East and west limits of Mount Pleasant Field indicated by small producer and dry hole. Probable field will not extend more than 5 miles in length and 3 to 4 miles north and south.

NORTH TEXAS

Promise of new pool or extension in Jack County west of Avis Pool.

Good producers in Gray and Young Counties.

Second well completed in Taylor-Link Pool of Coleman County.

KANSAS

Producers & Refiners Corp.'s No. 1 Kuske, Sedgwick County, filled up and slopped over in 12 hours—is offset to Barnsdall's No. 1 Samuel.

Russell County wildcat swabbed 221 bbls.

McPherson County wildcat of Shell Petroleum Corp. pinched in to 50 bbls. an hour.

GULF COAST

Moody corporation's No. 1 Herman estate, Pierce Junction, flowing 1,400 bbls. 31.5 gravity oil. South Texas Oil Co.'s No. 5 Morris, deep sand at Humble, flowing estimated 2,500 bbls.

Mission Drilling Co. extends Refugio production 2,000 feet east.

CALIFORNIA

Engineers tap oil string in burning well at Santa Fe Springs recovering 900 bbls. of oil and 1,000,000 feet of gas through subterranean tunnel. Flames show little change and it will require several more lines before cone can be dropped over mouth and well capped.

Lincoln Drilling Co.'s test near Summerland Field, Santa Barbara County, looks like possible discovery.

OKLAHOMA

Total production of 6 producers in Oklahoma City Field, July 2 gauge, was 16,897 bbls.

Signal Oil Co. test, 1½ miles from production in southeastern Seminole County, making 60 bbls. an hour.

Independent Oil & Gas Co. No. 1 Pappen, Pottawatomie County, flowed 973 bbls. from Hunton at 3,890 feet.

Shell Petroleum Corp.'s No. 1 Holotka, second producer in new pool opened by Sinclair, made 1,631 bbls. from Wilcox at 4,139-96 feet.

Deep pay horizon in Oklahoma City Field has been extended almost a mile northwest.

A.P.I. WEEKLY REFINERY STATISTICS

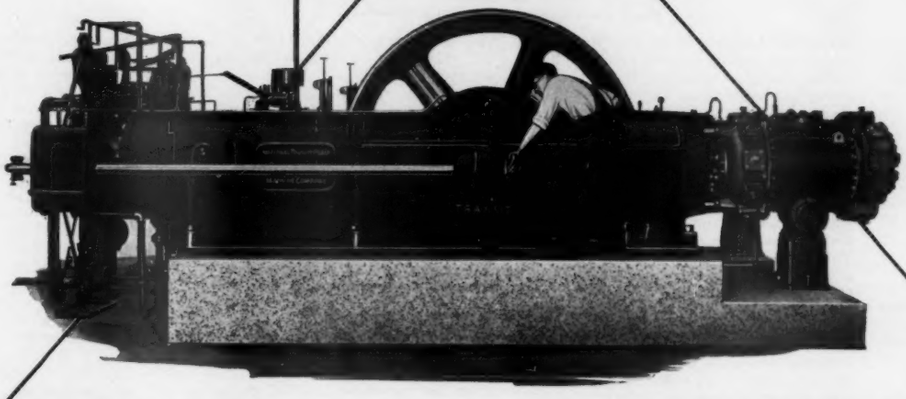
NEW YORK, July 2.—The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to stills, gasoline stocks and gas and fuel oil stocks—for the week ending June 29 follows:

	(1)	(2)	(3)	(4)
East Coast	100	3,517,700	6,721,000	10,298,000
Appalachian	85.2	669,600	1,198,000	1,074,000
Indiana, Illinois, Kentucky	98.4	2,257,500	6,794,000	3,205,000
Oklahoma, Kansas, Missouri	68.2	1,731,100	3,943,000	4,036,000
Texas	86.1	3,691,100	5,617,000	13,062,000
Louisiana and Arkansas	86.7	1,266,800	2,168,000	5,488,000
Rocky Mountain	90.6	512,700	1,876,000	564,000
California	95.5	4,816,500	11,720,000	102,744,000
Total United States	90	18,463,000	40,047,000	139,471,000
Texas Gulf Coast	96	2,845,800	4,770,000	8,118,000
Louisiana Gulf Coast	97.5	938,300	1,992,000	4,553,000

(1) Per cent refinery capacity represented. (2) Crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.

Companies represented in this report have a daily refinery capacity of 3,003,500 bbls. out of a total capacity in the country of 3,338,600 bbls. The reporting plants were operating 86.8 per cent of their capacity.

SILENT



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Biggest Gas Well in Richland Parish

Magnolia Well, Deepened, Estimated 70,000,000 Feet.
Unsuccessful Efforts to Kill Boykin and Pardue Craters

By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., July 1. — A couple of weeks ago Magnolia Petroleum Co. completed No. 2 McCoy, Section 29-16-6, about the center of the Richland gas field, as a 5,000,000-foot gasser, 1,020 initial rock pressure, at 2,401 feet. This week they deepened it 11 feet and brought it back in as an estimated 70,000,000-foot producer with no change in pressure. It is the biggest well in the field to date, exceeding the estimated open flow of the Boykin crater well by five to seven million feet—and it is a quarter of a mile south of the dry hole drilled by the Dixie Oil Co. some time ago.

Interest in drilling activities in Richland has given way to efforts to kill the Boykin and Pardue craters. Two relief wells a few feet east of the Boykin have been started through which it is hoped to be able to pump mud into the wild well and kill it. This method was tried on the Thompson crater in Section 21-16-6 but failed to work. The latter, now 150 to 200 yards across with the surface of the water 40 feet or so below ground level, caught fire again recently and halted efforts to stop further enlargement by sandbagging the bank. It is about to swallow a producing well and still further aggravate a rather desperate situation. Work on the Pardue crater has stopped while attention is concentrated on the Boykin well. While not so large as the other two this one presents the most difficult task of all. It was hoped to kill it by dropping a string of 20-inch pipe to the lower end of which a large funnel shaped flange is welded over the casing and then snub in a string of tubing and pump it full of mud using the Southern States (H. C. Otis) method recently described in The Oil and Gas Journal. This was done, but it was found that the escaping gas is coming up outside as well as through the casing and it is doubtful if anything at all can be done with the well under the circumstances.

Good Well in Mount Holly

McDonald Brothers appear to have a good well in No. 2-A Wilson in Section 25-15-18, Mount Holly district of Ouachita County, Arkansas, in a sand about 80 feet higher than that from which the other wells in the pool are producing. This sand was reported, in error, as being a lower stratum. The well made a drill stem test of sand from 2,774-79 feet that filled 20 joints with oil in 7 minutes. Six and five-eighths-inch casing was cemented at 2,773 feet and completion was scheduled for this week but was postponed for another week when wind toppled the derrick. It is planned now to delay the final test until the No. 3-B Wilson in the same section is ready to test about two weeks hence.

Dixie District

In the Dixie District of Caddo Parish, Ohio Oil Co.'s No. 1 Hunter in Section 17-19-14 is standing full of oil from 2,414 feet and waiting for standard rig. Several wells are near testing stage and locations for five more were made this week, making a total of 19 operations, including wildcats and semiwildcats in the district. The new locations are for S. T. Onyett and others' No. 1 Dixon SW SW Section 10-19-14; I. N. Pharis, trustee, No. 1 Oden, SE NE Section 19-19-14; Standard Oil Co.'s No. 3 Henderson, SW SE Section 7-19-14; Standard Oil Co.'s No. 6 Hunter, NW NW Section 17-19-14, and Standard Oil Co.'s No. 3 Oden, SW NE Section 18-19-14. Production from the four wells in the pool on the last gauge totaled 429 bbls., Gulf Refining Co.'s No. 1 Oden, Section 18-19-14, being the largest with 280 bbls. Standard Oil Co.'s No. 1 Oden, in the same section, made 115 bbls. and the discovery well, Standard's No. 1 Hunter, Section 17-19-14, pumped 22 bbls.; No. 2 Hunter, in Section 8 pumped 22 bbls.

Between the Dixie and Shift Tail Bayou districts and Pine Island, Frank Hood, of Shreveport, has a 360-acre lease in Section 11-20-15 on which he will shortly drill in the center of the S½ SE NW of the section. The lease is about a mile northeast of The Texas Company's big well on the Curtis lease in the Shift Tail Bayou Pool which has produced over $1,000,000 in oil to date. The geology on the tract shows a "high" and other very favorable conditions and four of the major companies have taken as many 80's to finance the well which will go to 2,600 feet.

Dixie Oil Co.'s No. 92 Dillon, Section 13-21-15, Pine Isand, was coring at 6,193 feet, having cored a sand at 6,182 feet which was dry. Magnolia Petroleum Co. is trying to get a seat for a drill stem test of their deep well in Pine Island, No. 18 Dillon in Section 24-21-15, having sand and shale from 4,537-65 feet.

Root Refineries Inc. has a 1,000-acre block centering on Section 8-13-10 Red River Parish, a mile east of Crichton and just north of production in the old Crichton-Lenzburg Pool, and will drill to 3,100 feet and perhaps deeper, depending upon what the log and correlations show.

Bigger Crop of Completions

There was a bigger crop of completions this week than for several weeks, most of them gassers. Five producers in Caddo, DeSoto, Red River and Champagnolle districts made 151 bbls.; 12 gassers had a total open flow of 85,233,000 feet, and there were 4 failures.

Dixie Oil Co.'s No. 98 Dillon, Section 13-21-15, Caddo Parish, pumped 11 bbls., total depth 1,748 feet. Gulf Refining Co.'s No. 16-A Levee Board, Section 34-21-15, Caddo, pumped 50 bbls. of 24.4 gravity oil in a light oil district, from 1,824 feet. Carlton Drilling Co.'s No. 2 Stevens, Section 12-11-16, a wildcat in the Logansport district of De Soto Parish, pumped 10 bbls. from 10 feet of sand, total depth 2,046 feet. The well had been under way for over a year and had been waiting on standard rig for over a month. Gulf Refining Co. completed a small pumper in the Bull Bayou district of Red River Parish, No. 24 Kennedy in Section 24-13-11, total depth 2,550 feet, initial production 30 bbls.

H. L. Hunt's No. 7 Gregory in Section 10-17-14, Champagnolle district, pumped and flowed 1,000 bbls. from 3,248 feet but 95 per cent of the production was salt water. Two other tests in Champagnolle were failures, both in the eastern extension. Lion Oil Refining Co.'s No. 1 El Dorado Realty Co. was abandoned at 3,064 feet on account of salt water and Magna Producing Co.'s No. 2 El Dorado Realty Co. was a salt water hole at 3,084 feet. Both are in the SE Section 7-17-13, and about a quarter of a mile apart. Ohio Oil Co.'s No. 1 M. H. Nash, in the NE SE, Section 7-17-13, made 5,000,000 feet of gas with a spray of oil and salt water from sand at 3,077-86 feet that showed for 8,000,000 feet of gas a couple of weeks ago.

New Gas Wells

Gas wells were scattered all through the Caddo-Waskom, Richland and Monroe districts, and in Panola County, Texas. Eastern Carbon Co.'s No. 4 Bryson in Section 8-17-16, Caddo Parish, was finished as a 5,000,000-foot producer at 2,713 feet, total depth 2,773 feet. Across the line in the Waskom district of Harrison County, C. H. Lyons and others' No. 2 Rudd, W. R. Anderson Survey, gauged 1,500,000 feet of gas, total depth 2,373 feet and Nick Barbare's No. 2 Fuller-Furrh, James Short Survey, made 570,000 feet, total depth 2,380 feet.

J. S. Herkness' No. 6 Bowles, Section 17-20-5, Morehouse Parish, made 5,000,-

(Continued on Page 147)

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

BOSSIER PARISH—CARTERSVILLE

Company, farm and location—	Remarks:
Delaware-Louisiana Development Co.'s No. 4 Bollinger, Sec. 38-23-11	Cored red shale and streaks of sand; T.D. 3,936 ft.

BOSSIER—ELM GROVE

J. F. Palmer's No. 4 McCann, Sec. 31-16-11	S.D. 1,910 ft.
Woodley Petroleum Co.'s No. 6 Whitehurst, 20,998 ft. E and 1,584 ft. N SW cor. Twp. 16, R. 12 in Sec. 34	Cmtd. 8¼-in. at 842 ft; tested dry at 843 ft. and 873 ft; drlg. at 880 ft.

CADDO PARISH—HOSSTON

Bayou State Oil Corp., 250 ft. W and 175 ft. N SE cor. SW SW, Sec. 23-22-15	Cmtd. 6-in. at 990 ft; waiting on standard rig to pump; T.D. 1,014 ft.

CADDO PARISH—MOORINGSPORT

Falcon Oil Co.'s No. 1 Nunley, 3,212 ft. N and 5,591 ft. E SW cor. Sec. 29-20-15	Rigging up.

CADDO PARISH—DIXIE

Gold & Sklar's No. 1 Hunter, NW cor. SW NE Sec. 17-19 14	Cmtd. 6-in. at 2,383 ft; 7 ft. sand and shale; T.D. 2,407 ft.
Gulf Refining Co.'s No. 3 Oden, 990 ft. W and 330 ft. S NE cor. Sec. 18-19-14	Drlg. shale 2,385 ft.
Gulf Refining Co.'s No. 4 Oden, NE cor. Sec. 18-19-14	Gummy shale 2,215 ft.
Ohio Oil Co.'s No. 1 Hunter, NW cor. NE NW Sec. 17-19-14	Full oil; waiting on standard rig; T.D. 2,414 ft.
Ohio Oil Co.'s No. 2 Hunter, SW cor. NE NW Sec. 17-19-14	Rig up.
Palmer Corp.'s No. 1 Hunter, SW cor. Sec. 8-19-14	Set 12-in. at 120 ft.
Palmer Corp.'s No. 2 Hunter, 990 ft. E, 330 ft. N, SW cor. Sec. 8-19-14	Location.
Ray-Dawes Drilling Co.'s No. 1 Hunter, NW cor. NE Sec. 8-19-14	Set 10-in. at 82 ft; drlg. 680 ft.
Standard Oil Co.'s No. 2 Henderson, SE cor. Sec. 8-19-14	Cmtd. 6-in. at 2,372 ft; T.D. 2,396 ft.
Standard Oil Co.'s No. 3 Henderson, 220 ft. N, 330 ft. W, SE cor. SW SE, Sec. 7-19-14	Location.
Standard Oil Co.'s No. 3 Hunter, 330 ft. S, 330 ft. E NW cor. SE NW, Sec. 17-19-14	Location.
Standard Oil Co.'s No. 5 Hunter, Sec. 17-19-14	Cmtd. 6-in. 2,384 ft; T.D. 2,395 ft.
Standard Oil Co.'s No. 6 Hunter, 330 ft. S, 330 ft. W, NE cor. NW NW, Sec. 17-19-14	Location.
Standard Oil Co.'s No. 2 Oden, NE cor. SE NE Sec. 18-19-14	Cored shale 2,390 ft.

(Continued on Page 152)

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

NORTH LOUISIANA

BIENVILLE PARISH

Company, farm and location—	Remarks:
W. G. Gray's No. 1 Snyder, SW NE, Sec. 15-17-6	Coring chalk 2,450 ft.

BOSSIER PARISH

Corbett and others' No. 1 Murff, SE cor. NE Sec. 15-17-11	Shut down 990 ft.
Nell & Lanier's No. 1 Biedenharn, SE cor. Sec. 23-21-14	Shut down 790 ft.
J. F. Palmer's No. 1 Schnitt, SW SE Sec. 14-17-12	Set 10-in. 127 ft.
Walker and others' No. 1 Antrim, NW cor. SE Sec. 28-22-13	Waiting orders 3,017 ft.
Woodmansee and others' No. 1 Bollinger, SE cor. NE Sec. 9-22-11	Shut down waiting orders 3,532 ft.

CADDO PARISH

D. C. R. Oil Co.'s No. 1 Oden, NE cor. NW Sec. 20-19-14	Coring shale 2,353 ft.
Lide and others' No. 1 Oden, SE cor. Sec. 21-19-14	Rig up.
Humble Oil & Refining Co. and R. W. Norton's No. 1 Fortner, Sec. 32-21-16	Black limy shale 4,690 ft.
S. T. Onnett, trustee's No. 1 Dixon, SW cor. Sec. 10-19-14	Derrick.
I. N. Pharis, trustee's No. 1 Oden, NE cor. SE NE Sec. 19-19-14	Location.
Simplex Oil Co.'s No. 1 Dickson, 660 ft. N. and E. C. Sec. 33-20-14	Drlg. 2,030 ft.
Standard Oil Co.'s No. 3 Henderson, SE cor. SW SE Sec. 7-19-14	Location.
Woodley Pet. Co.'s No. 4-A Knight, 22,991 ft. E and 1,273 ft. N, SW cor., Sec. 35-16-12	Location.
Woodley Pet. Co.'s No. 1-B Knight, Sec. 11-15-12	Arranging to deepen; total depth 1,936 ft.

CATAHOULA PARISH

Lochnager Petroleum Co.'s No. 1 Tallaferro, 572 ft. E 396 ft. S C Sec. 26-9-6	Shut down 900 ft.

CLAIBORNE PARISH

El Dorado Chief Oil Co.'s No. 1 Baker, SE cor. SE SW Sec. 26-20-7	Shut down 3,404 ft.
Southern Crude Oil Purchasing Co.'s No. 1 Christian, NE cor. NW SW Sec. 22-23-6	Derrick.

DESOTO PARISH

P. J. Becker, trustee's No. 1 Tull, SW cor. NE NE Sec. 22-12-15	Shut down 1,805 ft.
Benedum & Trees Oil Co.'s No. 2 State, 1,700 ft. S and 1,350 ft. W NE cor. Sec. 22-14-12	Drlg. 2,645 ft.
Lide & Ford's No. 1 Nabors, SW cor. SE SW Sec. 32-12-11	Cemented 10-in. at 40 ft.; drlg. 500 ft.
Longstreet Syndicate's No. 1 Ramsey, NE cor. SW NE Sec. 33-13-16	Changing to heavy rig and arranging to sidetrack; T.D. 2,802 ft.

(Continued on Page 151)

Oklahoma City Field Extended a Mile

Field Producing 16,651 Bbls. from Five Wells. Seminole Area Continues To Show New and Rich Producing Spots

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

The deep pay horizon in the Oklahoma City Field has been proved productive almost a mile northwest of the discovery well when the Mid-Kansas Oil & Gas Co.'s No. 2 Fortson came in a producer. It was drilled to a total depth of 6,449 feet and, still in the lime, it has been averaging 300 bbls. an hour of 37.5 gravity crude. The Prairie Pipe Line Co. connected to the lease, its first connection in the field.

The five producing wells in the Oklahoma City Pool on the gauge of July 1 produced 16,651 bbls., including the so-called gasoline well. The production is divided as follows: Indian Territory Illuminating Oil Co.'s No. 1 fee, C SE SE, Section 24-11-3w, Oklahoma County, made 2,360 bbls. of oil and 763 bbls. of water; Mid-Kansas Oil & Gas Co.'s No. 2 Fortson, C NW NE, Section 24-11-3w, made 5,735 bbls.; Coline Oil Co.'s No. 1 Olds, SE NW, Section 24-11-3w, produced 4,840 bbls.; Sinclair Oil & Gas Co.'s No. 1 Stamper, NE SW NW, Section 30-11-2w, Oklahoma County, gauged 2,365 bbls. oil and four-tenths of 1 per cent water. The Sinclair Oil & Gas Co.'s No. 1 Kinter, NW SE, Section 30-11-2w, Oklahoma County, made 1,420 bbls. of natural gasoline.

The fishing job that has delayed the completion of the Mid-Kansas Oil & Gas Co.'s No. 1 Fortson, C SW NE, Section 24-11-3w, has been cleaned up and the well is drilling ahead at 6,370 feet, and flowed 85 bbls.

The Prairie Oil & Gas Co. has made two new locations on its Hiddleson lease, in the SE, Section 19-11-2w. No. 2 is located in the SE cor., and No. 3 in the SW NW SE, both in Section 19-11-2w. The No. 2 location is the most easterly test in the field.

Early in the week the Mid-Kansas Oil & Gas Co.'s two tests on the Fortson farm in the W half NE, Section 24-11-3w, Oklahoma County, found showings of oil in the deep pay horizon. No. 1 Fortson, C SW NE, Section 24-11-3w, is fishing at 6,370 feet and has made 55 bbls. of oil naturally. No. 2 Fortson, C NW NE, Section 24-11-3w, Oklahoma County, is the biggest producing well in the field at the present time; it is producing from the pay at 6,414-49 feet, where it is making 6,735 bbls. on the gauge of June 28. The flush production of the well is larger than the discovery well at the time it was drilled in, and from these indications together with the fact that it is producing at a depth shallower than the original well points to larger production to the north if the structure builds up that way. Without the elevations of all the wells in the field it is impossible to tell which are running the higher from a geological standpoint.

Closely following the Mid-Kansas wells was the Coline Oil Co.'s No. 1 Olds, C SE NW, Section 24-11-3w, Oklahoma County, which increased the importance of the Oklahoma City Field as it is the most westerly completion in the pool. The well was holding its flow around 165 bbls. an hour and the gauge of June 28 was 3,400 bbls. for the 24 hours from sand at 6,300-11 feet. Some express an opinion that its performance is similar to the discovery well of the Indian Territory Illuminating Oil Co. After the plug was drilled through and the crew was bailing down the hole at about 1,700 feet, the well cleaned itself. When the oil was turned into the tanks it gauged 183 bbls. the first hour, but later settled down to about 170 bbls. an hour.

First Producer in This Sand

The Coline Oil Co.'s well is the first in the field to find production in sand at this depth. In fact it is the first sand that any well in the field has had at this depth. Only one other well in the pool is producing from a sand in the area and that is the Indian Territory Illuminating Oil Co.'s No. 1 Trosper, in the C NE SW, Section 13-11-4w, which made 200 bbls. of oil and 10,000,000 feet of gas at 3,973 feet.

The identity of the sand is debatable. Some call it a reworked Wilcox sand. It will take more wells in the same horizon before it is definitely known.

Seminole Future Possibilities

Recent strikes in the Seminole area show that it has not been thoroughly exploited and new Wilcox sand pools rich in production may yet be found. This is evidenced by the Sinclair Oil & Gas Co.'s No. 1 Davis, in Section 7-6-8, eastern Seminole County. The well came in making more than 4,000 bbls., indicating the existence of an important oil deposit in that vicinity. The pool is expected to go east on account of the recent oil found in the Shell Petroleum Corp.'s No. 1, a quarter section east of the above well. There is a considerable area open for development, and not a single dry hole, to the west. The Gypsy community test in Section 9-6-7, 4 miles west, has been running very favorably on the upper formations and is looked upon as an important and interesting test. The well had the top of the Viola at 4,185 feet and is rigging up standard tools at 4,212 feet and will resume drilling in a short time.

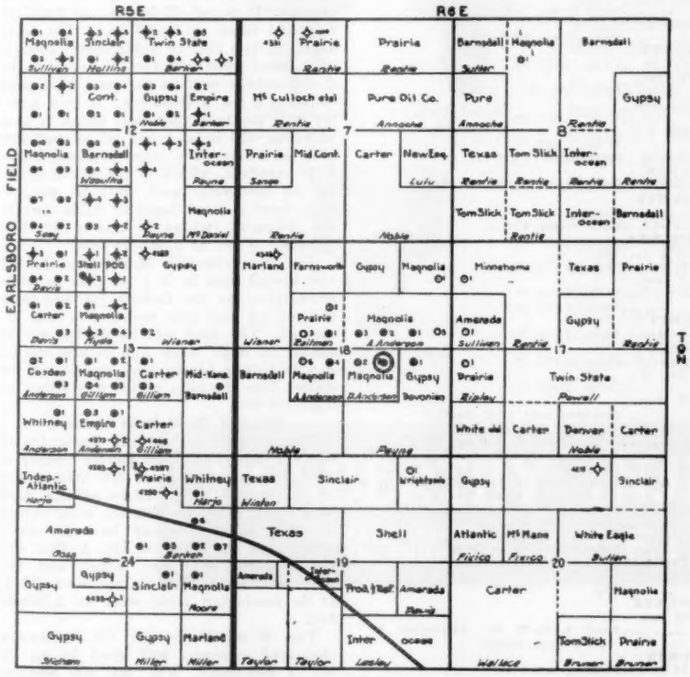
The production in the Seminole area during the past week shows an increase due to the finding of new areas that are proving very prolific in oil production. The pools that have received the most benefit from the new wells are Earlsboro and a new district in the eastern part of Seminole County.

Asher Slows Down

In the Asher Pool operations are slowing down. There were 41 operations, 17 of which are shut down, mostly in the townsite of Asher. Ten of the wells that were drilling made producers and 10 found water in the Viola. The production of the 10 wells was 9,379 bbls. on June 29.

One of the interesting wells in the townsite of Asher is Clark & Cowden's No. 1 on Block 1 in the Highland addition. It had the top of the Hunton lime

(Continued on Page 70)



The well in the circle is the discovery well in the new extension to the Earlsboro Field, in Seminole County, Oklahoma, which is still making 1,800 bbls. on air. Eight more locations have been added to the pool making a total of 17 operations in all. The seven completed wells are averaging 21,000 bbls. a day from the Wilcox sand.

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location— Remarks:

Smith Bros.' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w ..... Shut down 385 ft.

Washoma Oil Co.'s No. 1 Acre, SW cor. NE Sec. 14-24-11w ..... Rig.

BECKHAM COUNTY

F. Coogan's No. 2 Holmesburg, SE NW Sec. 25-9-25w .. Drlg. 1,800 ft.

Producers Exploration Co.'s No. 1 Seidell, SE cor. SW SW Sec. 17-9-22w ..... Shut down 2,402 ft.

Trees Oil Co.'s No. 1 Rodgers, SW cor. SW Sec. 30-8-25w ..... Abandoned 2,323 ft.

Carson and others' No. 1 Danby, SW cor. SE NE Sec. 20-8-22w ..... Shut down 1,465 ft.

Pferffel and others' No. 1-A Carter, NE cor. NE Sec. 35-9-22w ..... Abandoned 1,500 ft.

BLAINE COUNTY

Lowen and others' No. 1 Unknown, NW cor. SW NW Sec. 27-16-11w ..... Spudded and shut down; renewing leases.

Washoma Oil Co. and others' No. 1 Phillips, C NW SW Sec. 13-19-10w ..... Shut down 1,365 ft.

CADDO COUNTY

Abernathy & Brown's No. 1 Horton, SE cor. Sec. 8-6-13w.. Shut down 535 ft.

J. B. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w .. Shut down 150 ft.

W. J. Hartley's No. 1 Galbreath, SE cor. NW SE Sec. 29-5-12w ..... Shut down 3,394 ft.

CLEVELAND COUNTY

Daniels & LeWright's No. 1 Vandever, C SW Sec. 15-7-1w ..... Shut down 3,130 ft.

Phillips Pet. and T. B. Slick's No. 1 Sudick, NE cor. NE Sec. 8-10-2w ..... Drlg. 6,560 ft.

COAL COUNTY

Indian Territory Illuminating Oil Co.'s No. 1 Harris, SE NE Sec. 10-1-11e ..... Shut down 1,975 ft.

W. E. McGraw's No. 1 King, C SW NE Sec. 11-1-8e .... Drlg. 950 ft.

Indian Territory Illuminating Oil Co.'s No. 1 Cook, SW cor. NW Sec. 10-1-11 ..... Drlg. 7,430 ft.

J. S. Cosden's No. 1 Richardson, NW cor. NE NE Sec. 6-2-8 ..... Fishing 1,855 ft.

McGinley & Sigler's No. 1 Willsey, NW cor. SE SE Sec. 7-2-8 ..... Rig.

E. W. Whitney's No. 1 Brown, C SE NE Sec. 16-2-8 .... Shut down 202 ft.

COMANCHE COUNTY

Muse et al's No. 1 Cross, NW SW SW Sec. 4-1-9w ..... Drlg. 1,751 ft.

Green and others' No. 1 Wilson, C NE SW Sec. 14-1-12w.. Shut down 4,056 ft.

CREEK COUNTY

Shaffer et al's No. 1 Moore, SW SE SE Sec. 3-18-9 .... Drlg. 150 ft.

CUSTER COUNTY

W. E. Witt's No. 1 Wellman, C SE Sec. 1-14-14w ..... Rig and tools.

GARFIELD COUNTY

E. L. Love and others' No. 1 White, SE cor. NW Sec. 9-24-6w ..... Drlg. 5,260 ft.

GRADY COUNTY

J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w .. Spudded and shut down.

J. M. Henry and others' No. 1 Abraham, SE cor. NW Sec. 4-5-8w ..... Rig.

GRANT COUNTY

Baucher et al's No. 1 Deadman, SW SE Sec. 12-28-4w ... Rig on ground.

Cowden and others' No. 2 Vollmer, CEL NE SW Sec. 22-25-4w ..... Shut down 5,640 ft.

Lario-Lathrop's No. 1 Cornell, NW cor. NW Sec. 24-28-3w ..... Abandoned 4,846 ft.

GARVIN COUNTY

Gardner Pet. Co.'s No. 1 Halverson, SW cor. NE Sec. 8-4-2 ..... Drlg. 1,600 ft.

GREER COUNTY

Helmerick & Payne's No. 1 Henck, NW cor. Sec. 23-6-24w. Rig on ground.

I. T. I. O. and others' No. 1 fee, C SW NE Sec. 17-6-24w ..... Drlg. 1,762 ft.

S. M. Stauffer's No. 1 Castleman, SW NE Sec. 8-4-26w .. Drlg. 450 ft.

HARMON COUNTY

I. T. I. O. Co.'s No. 1 fee, C SW SE Sec. 17-5-24w ..... Rig.

(Continued on Page 202)

McPherson County, Kans. Has Big Well

Flows 368 Bbls. in Two Hours. Search for Oil in Kansas Includes 51 Counties and 477 Operations

By W. A. Spinney
Staff Correspondent, Kansas Fields

McPherson Oil & Gas Co. and Shell Petroleum Corp.'s No. 1 Reitz, NW SE SW, Section 1-20-2w, McPherson County, Kansas, wildcat test flowed 368 bbls. the first two hours, making it the newest and biggest oil well in the county. Oil is coming from chat at 2,935-66 feet. It is 34 gravity crude. The well was drilled by the McPherson Oil & Gas Co., which owns the gas rights on the block, but the operation is being taken over by the Shell Petroleum Corp. which owns the oil rights. It was drilled on a large block of leases and is 60 miles from the nearest pipe line, which is in Sedgwick County. The owners advise that the oil will be shipped out in tank cars from a loading rack 5 miles from the well, until a pipe line connection can be established.

The present rate of production in Kansas only lacks a few hundred barrels of attaining the State's daily average in the highest oil producing year, 1918. This is the year the Towanda Field was yielding its big production.

Sedgwick County leads the State in production and from its 91 completed wells it has a daily average of close to 35,000 bbls. and the important part of this county's sudden rise to prominence is that 11 months ago it did not have any oil production at all The county is producing over one-third of the State's output and many expect the production of the county to reach 50,000 bbls. a day before the year is out.

Almost half of Kansas is being tested out for oil and gas production. The search for oil is going on in 51 counties in the State and in those counties there is a total of 477 operations under way. Sedgwick County leads in drilling wells and completions, the total of operations in that county alone being 115.

Recent Blocking of Leases

Marland Production Co. has taken a 3,650-acre block in Township 17-12w, Barton County, for a period of 10 years. Transcontinental Oil Co. has taken a block of 16,700 acres in Ellsworth County in Townships 15-16, Ranges 6-7w. Unnamed persons have a block consisting of 14 sections in Township 14-15, Range 7w, Ellsworth County. Wichita parties have a block in Rice County, in Township 21-10w consisting of nine sections.

Marland Production Co. has taken a block in Township 1, Ranges 13, 14 and 15, on the edge of the Kansas and Nebraska state line in Smith County, and another block in McPherson County, in Township 18, Range 5w.

E. W. Marland, Inc. has taken a block of about seven sections in Township 14-32w, Trego County, and will start a well in 90 days.

Skelly Oil Co. has a block of about 12 sections in Township 15, Ranges 24 and 25w, Trego County. Unnamed parties have a block of eight sections in Townships 13 and 14, Range 22w, Trego County.

There are 25 surface parties, representing 15 major companies working geology in western Kansas, and four magnetometer parties and six core drills running, all west of Range 15, in the western part of the State.

Gypsy Oil Co. has taken a block of 19 sections in Townships 32 and 33, Ranges 8w and 9w, Harper County.

Moncrief & Thomas have a block of 18 sections in Townships 11 and 12, Range 24w, Trego County. Blair and others have 30 sections in Townships 14 and 15, Ranges 22 and 23w. Sinclair Oil & Gas Co. has 960 acres in Sections 2 and 10-15-22w, Trego County. Slick, Pryor and Lockhart have taken Sections 28, 29, 32 and 33 in Township 15, Range 22w, Trego County.

Mid-Kansas Oil & Gas Co. has checkerboarded in Kiowa County in Townships 27, 28, 29, 30 and 31, Ranges 16, 17, 18, 19, 20 and 21w.

Southwestern Sumner County

New producers have been found on both sides of the pool in southwestern Sumner County, recently brought into prominence by the Prairie Oil & Gas Co. Marland Production Co. has completed No. 1 Curry for 400 bbls. a day from chat at 3,444-62, total depth 3,485 feet. It is located in Section 26-34-2. The well is 1½ miles northwest of the Prairie Oil & Gas Co.'s new well on the Olsen farm in Section 3-34-2. The few wells that have been drilled between the two have been small producers, however. From all indications the pool will extend to the east. A number of dry holes bar any extension to the west. Nevertheless the Tidal Oil Co. is starting a test 1½ miles to the west, in the SW cor., Section 33-34-2, its No. 1 McCutcheon. The Derby Petroleum Co. is starting a test in the NW cor., Section 35-34-2, and the Prairie Oil & Gas Co. is starting a west offset to the Derby.

In the northern end of the field several tests are drilling which are expected to be completed in a short time. Marland Production Co.'s No. 2 Spence, NE SE NE, Section 27-34-2, is drilling at 3,150 feet. Dickey and others are fishing in No. 1 Kratz. No. 2 Kratz is making 75 bbls. a day. Both are in Section 26-34-2.

Deep Test in Rice County

Milmac Oil Co. and others have staked a location in the NW SE SE, Section 29-19-7w, Rice County, their No. 1 Cain. The structure was worked by Wichita geologists and is in the area between the old Rice County Field and the new well of the Prairie Oil & Gas Co. and Tom Slick Oil Co. in southeastern Russell County. It is on a block of 10,000 acres and is to be spudded by July 15. The test will be drilled to a total depth of 3,700 feet if necessary.

A new well is to be started 8 miles north of Caldwell by the Blackwell Oil & Gas Co. It is to be drilled on the Rex farm in Section 22-33-3w, Sumner County. A test was drilled on this farm which showed indication of being a producer but was afterwards abandoned.

Ramsey & Ramsey of Eldorado have made a location for No. 2 Mason at Greenwich on the townsite about 400 feet north of No. 1 Mason.

The latest test in Reno County to show oil is A. R. Perry and others' No. 1 Oswald, NE SE Section 30-22-5w, reported to be in sand at 3,890-3,928 feet with 2,000 feet of oil in the hole. It was deepened to 3,966 feet and now has the supposed Viola formation. The well is about 12 miles south of the gas field in Rice County, and is running higher on structure than the test in the NE cor. of Section 21-22-5w, which had a good showing in the Wilcox.

A southeastern McPherson County wildcat is showing 3,000,000 feet of gas. It is Tatlock and others' No. 1 Hoyer, SW NE Section 32-20-1w, east of Moundridge. The gas showing was in chat at 2,955-95 feet and unless the gas increases it will be drilled to the lower formations. A new wildcat test has been announced in the same county by the Lario Oil & Gas Co., No. 1 Dilner, SE SW Section 10-20-1w. It will be carried to the 3,500-foot horizon if necessary. It is about 5 miles northeast of the Tatlock test.

Another test in the same county, McPherson Oil & Gas Co.'s No. 1 Reitz, NW SE SW Section 1-20-2w, had a small show of oil at 3,057-61 feet, in chat, and is shut down for orders.

The Prairie Pipe Line Co. has completed a 6-inch oil line from its station in Butler County to the new Robbins Pool in 20-28-1e, southeast of Wichita, in Sedgwick County. It is 18 miles long and was completed in 11 days.

Two Sedgwick County wildcats are dry holes and will probably be abandoned. Hartman & Skaer's No. 1 Hutchinson, SE SW Section 23-28-3w, was measured up at 4,230 feet in the Siliceous lime with nothing showing. Magnolia Petroleum Corp.'s No. 1 Wise, NW cor. Section 36-28-2w, is shut down at 3,838 feet, where it had a small showing of oil and then went into water. It was thought to be running high as it had only 262 feet of lime.

Prairie-Slick Well a Good One

The Prairie Oil & Gos Co. and Tom Slick Oil Co.'s No. 1 Sellans, SW NE Section 36-15-13w, Russell County, swabbed 57 bbls. in 12 hours from the pay at 3,342-55 feet. The well later pumped 302 bbls. in 24 hours and assures that part of the county more development in the near future. The test is located a half mile northwest of a well drilled several years ago that showed considerable oil.

The Goodrich Pool 9 miles northeast of Wichita added another well during the past week. It is the Marland Production Co.'s No. 1 Black, SW SE NW Section 16-25-1. It found oil in chat at 2,977-84 feet and filled up 3,000 feet. The total depth of the test is 3,002 feet. The oil was found about 20 feet higher than in the discovery well in the pool, the same company's No. 1 Goodrich. It is a quarter mile north of that well which is now pumping 426 bbls. a day of oil and 200 bbls. of water. The same company's No. 1 Westerfield, which is the south offset to the discovery well, will be plugged back from a total depth of 3,515 feet to the dolomite, where it had a 125-bbl. showing of oil at 3,333-38 feet.

Ted Washabaugh's McPherson County test should soon be in a position to make production, as the fishing job has been cleaned up and new casing run and cemented. The plug will be drilled out in about 10 days' time and 5-inch casing run to bottom of the hole, and it will be drilled into the pay, which was found at 3,301-04 feet.

350-Bbl. Well Near Benton

The wildcat well of the Lario Oil & Gas Co. near Benton in Butler County is producing an average of 350 bbls. a day in Section 10-26-3e. Three offsets have been staked and two rigs are being moved in. The same company has the south offset and the Sinclair Oil & Gas Co. the diagonal southwest offset and the Arkansas Gas & Fuel Co. the west offset. It is producing from chat at 2,760-64 feet.

The Woods-Boyle Oil Co., a newly chartered concern, will spud in on its No. 1 Sandusky, NW NE SE Section 34-26-1w, Sedgwick County, this week. It is the first test on a large block of

(Continued on Page 148)

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless otherwise marked)

Company, farm and location—	Remarks:
BARBER COUNTY	
Skelly Oil Co.'s No. 1 Temple Ranch, Sec. 13-34-15w	Rig.
Barbara Oil Co.'s No. 1 Angel, NW cor. NE Sec. 14-33-13w	Drlg. 4,250 ft.
Robertson et al's No. 1 Powell, SE cor. SE Sec. 11-32-10w	Rig on ground.
Allison & Fitzwilliams' No. 1 Morrisse, C NW SE SE Sec. 9-30-12w	Underreaming 3,225 ft.
BARTON COUNTY	
Gobel & Bending's No. 1 Bartlett, SW cor. SW Sec. 28-17-15w	Shut down 1,190 ft.
Everett & Wiley's No. 1 Ward, NW cor. SW Sec. 12-20-13w	Shut down 3,948 ft.
BUTLER COUNTY	
White Eagle's No. 1 Bachelder, SW cor. Sec. 17-25-3e	Drlg. 2,125 ft.
Crawford et al's No. 1 Thompson, NW cor. SW Sec. 2-24-3e	Drlg. 940 ft.
Aladdin Petroleum Co.'s No. 1 Bronsenger, NE cor. NE SW Sec. 24-27-3	Drlg. 1,900 ft.
Shell Petroleum Corp.'s No. 1 Thiesstin, C SE SW SE Sec. 10-24-3	Drlg. 2,930 ft.
Smith & Ash's No. 1 Donnelly, NE cor. NE Sec. 8-24-6	Shut down 3,130 ft.
CHASE COUNTY	
Marland Prod. Co.'s No. 1 fee, SW NE Sec. 8-21-8e	Drlg. 2,810 ft.
COWLEY COUNTY	
Landon & Slick's No. 1 Daniels, NE SE Sec. 6-30-5e	Rig.
J. B. Markley's No. 1 Tatum, SE cor. SW Sec. 11-31-6	Shut down 520 ft.
DICKINSON COUNTY	
Cress & Hawky's No. 1 Menll, NE cor. Sec. 12-15-2	Rig.
Johnson's No. 1 Doetwiler, SW NE NW Sec. 32-16-4e	Drlg. 3,005 ft.
Prairie Oil & Gas Co.'s No. 1 Morgan, NW cor. Sec. 26-16-3e	Drlg. 1,450 ft.
Milmac's No. 1 Buhler, SW NE Sec. 28-16-4e	Drlg. 2,341 ft.
ELLIS COUNTY	
T. C. Johnson's No. 1 Robbins, SW NW Sec. 15-14-16w	Drlg. 3,240 ft.
John Brown's No. 1 Gestner, SE cor. SW NE Sec. 13-13-18w	Drlg. 3,715 ft.
Rush Oil Co.'s No. 1 Gatewood, NW cor. NW Sec. 4-15-20w	Drlg. 3,460 ft.
Finney & Weiner's No. 1 Freeman, SE cor. SW Sec. 24-15-20w	Spudded and shut down.
Phillips Pet. Co.'s No. 1 Johnson, SW cor. NE Sec. 9-13-19w	Drlg. 3,593-95 ft.; swabbed 624 bbls. in 33 hrs.
Phillips Pet. Co.'s No. 1 Schneider, NW cor. Sec. 20-12-17w	Drlg. 3,429-39 ft.; 105 bbls. in 8 hrs.; shut down.
Burger et al's No. 1 Hadley, SW cor. SW NW Sec. 20-11-17w	Drlg. 2,275 ft.
John Brown No. 1 Company's No. 1 Gestner, SE cor. SW NE Sec. 13-13-18w	Drlg. 3,715 ft.
ELLSWORTH COUNTY	
The Texas Company's No. 1 Sherman, NE SW Sec. 16-17-6w	Rig.
EDWARDS COUNTY	
British American Oil Co.'s No. 1 McCarty, NE cor. NW Sec. 31-25-17w	Sand 4,666-70 ft.; 14,000,000 ft. gas; shut down.
GEARY COUNTY	
Wright et al's No. 1 Younker, NW cor. NE Sec. 17-11-5	Fishing 2,170 ft.
GRAHAM COUNTY	
Gulf Coast Oil Co.'s No. 1 Johnson, C S half Sec. 27-8-25w	Shut down 3,600 ft.

(Continued on Page 201)

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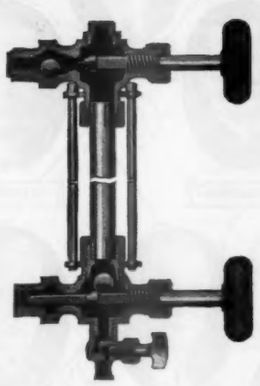

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Tests for Oil Come in Big Gassers

Carolina-Texas and Driscoll Fields in Laredo Territory Feature Week in Southwest Texas. New Wells in Bruner

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., July 1.—The Carolina-Texas and the Driscoll Field presented most of the features of interest the past week in the Laredo territory, while in the Luling district it was merely a matter of more wells in the Joe Bruner Field. In the Yoast Pool in southern Bastrop County, Trapshooter Reilly bought the Trinity Drillers lease with a couple of wells on it and room for more.

In the Carolina-Texas Pool in Webb County, George S. Marshall's No. 1 Benavides, in Survey 684, on a drill stem test looked like a 40,000,000-foot gas well in sand at 2,136-43 feet. Casing is set at 2,134 feet. It was expected to pick up oil production at about 2,600 feet, the test being located between the Usher Carson oil wells at that depth on the east and production of The Texas Company on the west, each a quarter to a half mile away but the 2,136-foot sand looked too good to pass up, with gas having an ample market. Trapshooter Reilly completed his No. 1 Benavides in the next survey south, a good oil well at about 3,000 feet, and now he has started his No. 2 Benavides a little west of No. 1 and due south of George D. Marshall and believes he will get the same 2,136-foot sand. Carolina-Texas Oil & Gas Trust's No. 7 Benavides, an offset to The Texas Company's 2,600-foot oil well mentioned above is now drilling at around 2,200 feet. These three are the only tests in the Carolina-Texas Pool at this time.

Trapshooter Reilly is running tubing for his No. 4 Hinnant in the new pool in Zapata County northeast of the Jennings gas field. Casing was set at 1,585 feet and it looks like a good well. Operators are expecting that pool to spread out and make a pretty sizeable crude output. M. Muchelroy, Jr., who picked up production in unproven territory a few miles south of it in Survey 412 some weeks ago, is starting to move in machinery for his second test. Buck & Coursey several miles south of Muckelroy have a fishing job on hand.

In the Driscoll Pool in Duval County, Driscoll's No. 16 fee at 2,955 feet is a big 75,000,000-foot gas well with 1,100 pounds rock pressure. He has set casing at 2,945 feet. Nos. 14 and 15 were oil wells and the No. 16 looked at first as though it would be an oil well. No. 14 and 15 were completed at 2,899 feet and No. 15 is now making 400 bbls. of oil plus about 12 per cent water. No. 16 at 2,896-2,911 feet showed 1,000 feet of oil and some salt water. Deepened to 2,955 feet with casing set at 2,945 feet it is a 75,000,000-foot gas well. No. 15 is 300 feet south and 300 feet west of No. 14 and No. 16 is 300 feet south and west of No. 15. Water from the No. 14 is hot and that from No. 15 cold, a circumstance that is puzzling to the geologists.

Kohler Gas Field

It looks like the Kohler gas field and the Simms gas field in Duval County were going to merge together judging from the Humble Oil & Refining Co. and Reiter-Foster Oil Corp.'s No. 28 Kohler which came in last week a 10,000,000-foot gas well at 1,787 feet. It is in the northwest corner of Section 171 of the Kohler ranch of Duval County. The nearest production in the Simms gas pool to the southwest is a trifle over 2 miles and the nearest in the Kohler is diagonally across a section of land to the northwest. There are wide open spaces that have not been tested and the connection may have to squeeze in between two dry holes but there is opportunity for the fields to merge and the sand depth is the same.

Joe Bruner Field

Forest Oil Corp.'s No. 1 Lucy Moore, south of the town of Luling and more than a mile from the nearest oil production in the Joe Bruner Field, gauged 3,765,000 feet of gas at 1,520 feet. There is a chance that some drilling will be stimulated inside the townsite of Luling where some early buyers of leases paid some high prices. Whether any production will be found is another thing. Oil in the Bruner Field is at around 2,700 feet in depth in the Edwards lime. This gas is from younger formations. Geologists figure it out that the fault displacement disappears south of the town of Luling, but there might be some small oil wells in the Edwards there.

Humble Oil & Refining Co. completed seven producers in the Joe Bruner Field, and Gulf, Cranfill & Reynolds, Shell, Texas and Lutex each one.

In the old Luling Field, Magnolia Petroleum Co. completed the No. 2 H. M. Lochman at 2,184 feet and got a 20-bbl. well. The important thing about it is that it extends the old field another location or so to the northeast.

In the Joe Bruner Field, the Shell Petroleum Corp. abandoned its No. 2 Clyant Smith at 2,662 feet, dry. This is the well that came in so big in the Chalk and caught fire, producing at 2,300 feet and was later deepened to the Edwards. Shell's No. 6 R. W. Malone, Gulf's No. 7 W. L. Smith and Hill and associates' No. 1 Hanson were all abandoned as failures last week.

Southwest Texas

	Bbls.
Branyon	10
Bruner	51,418
Dale	424
Gonzales	82
Kingsville	270
Larremore	167
Luling	11,473
Lytton Springs	1,012
McMullen County	80
Medina County	30
Mirando district	11,012
Somerset	1,937
Yoast	1,131
Total	79,046
Total previous week	79,274
Decrease	228

COMPLETIONS

Bastrop County

Atlantic Oil Producing Co.'s No. 7 Yoast, A. Garcia Survey, completed at 1,512 feet making 75 bbls.

The Texas Company's No. 7 Yoast, A. Garcia Survey, completed at 1,917 feet, dry and abandoned.

Caldwell County

Cranfill & Reynolds' No. 3 Northcut, completed at 2,704 feet, pumping 100 bbls.

Forest Oil Co.'s No. 1 Moore, completed at 1,520 feet, making 3,765,000 feet of gas.

Gulf Production Co.'s No. 6 J. L. Northcut, completed at 2,678 feet, making 800 bbls. oil, 100 bbls. water.

Magnolia Petroleum Co.'s No. 2 H. M. Lochman, one-half mile northeast of old Luling Field, completed at 2,184 feet, making 20 bbls.

Lutex Oil, Inc.'s No. 6 Wilson, completed at 2,714 feet, on the pump, no gauge.

Live Oak County

Houston Oil Co.'s No. 1 T. G. Parr, J. McMullen Survey, completed at 2,079 feet, a gas well of 35,000,000 feet daily.

Duval County

S. & O. Oil Co.'s No. 4 Hahl, Survey 250, Block 23, completed at 2,339 feet, making 150 bbls.

Robert Driscoll's No. 16 fee, completed at 2,955 feet, gauging 75,000,000 feet of gas, 1,100 pounds rock pressure.

Humble Oil & Refining Co.'s No. 28 Kohler, Survey 171, completed at 1,787 feet, making 10,000,000 feet of gas daily.

Webb County

George S. Marshall's No. 1 Webster, Survey 684, completed at 2,143 feet, making 40,000,000 feet of gas daily, 600 pounds rock pressure.

ABANDONED TESTS

Bexar County

B. L. Raborn's No. 1 Engleman, Survey 73, dropped as an active test at 1,715 feet until drilling is resumed.

Medio Oil Co.'s No. 9 Cohen, standing at 474 feet, to be dropped from the list until drilling is resumed.

W. H. Kennon's No. 2 fee, Survey 4, dry and abandoned at 983 feet.

Caldwell County

Turman & Brown's No. 1 Beversdorff, A. Floyd Survey, location abandoned.

Shell Petroleum Corp.'s No. 2 Clyant Smith, J. Hinds Survey, at 2,622 feet, ran swab twice and flowed water; abandoned.

Shell Petroleum Corp.'s No. 6 R. W. Malone, abandoned location.

Swearingen trustee's No. 1 Caldwell County land, J. Hinds Survey, to be dropped as abandoned at 2,503 feet; standing.

Morgan-Duke's No. 2 Cora Malone, A. Floyd Survey, location abandoned.

Hill and others' No. 1 Hanson, dry and abandoned at 2,694 feet.

Gulf Production Co.'s No. 7 W. L. Smith, plugged and abandoned at 2,838 feet.

Colorado County

National Oil Co.'s No. 1 H. T. Brandt, Freeman Pettus league, location dropped until work is started.

Duval County

Humble Oil & Refining Co.'s No. 25 Kohler, Survey 172, dry and abandoned at 1,804 feet.

DeWitt County

Gibson & McIntire's No. 1 William Von Roeder, W. G. Hill league, location dropped until work is started.

Guadalupe County

Magnolia Petroleum Co.'s No. 1 Ed Adams, S. Highsmith Survey, abandoned as dry at 2,837 feet.

Kendall County

C. W. Gould and others' No. 1 A. J. McCrocklin, shut down due to litigation, has been dropped until drilling starts.

Kinney County

Mardon Oil Co.'s No. 1 Jim Clamp, Survey 346, shut down at 2,540 feet for some months, dropped as abandoned.

San Patricio County

George B. Pickett's No. 1 Whitworth, abandoned at 3,318 feet.

Victoria County

Humble Oil & Refining Co.'s No. 1 G. F. Oliver, formation test completed.

Humble Oil & Refining Co.'s No. 1 G. Knape, formation test completed.

Humble Oil & Refining Co.'s No. 1-A Kohutek, formation test completed.

NEW LOCATIONS

Bexar County

W. H. Kennon's No. 3 fee, being com-

(Continued on Page 146)

DEMAND FOR NATURAL GAS WILL STIMULATE WILDCAT OPERATIONS

By B. D. Stevenson

SAN ANTONIO, Tex., July 1.—Undoubtedly the Magnolia Gas Co.'s new line to take gas from Southwest Texas fields is going to be one of the biggest influences in wildcatting in Southwest Texas for some time. From an alleged overproduction of gas Southwest Texas will change to an underproduction when this new line is completed, with a capacity of 125,000,000 cubic feet of gas daily. Construction of the line is such that gas will move through it at the rate of 80 miles an hour.

Magnolia Petroleum Co., the parent company, owns a great deal of gas in Southwest Texas but will undoubtedly need more and with a market at hand wildcatters are certain to look for gas structures and test them out. The opinion of many oil men around the Coast territory of Southwest Texas, 50 miles up and down the coast from Corpus Christi and inland 50 miles, had always been that it was a gas country, and with no market for gas and they stayed away from that territory. A few years ago the Southern Gas Co. built a line into the Mirando territory from San Antonio, Houston Oil Co. built a line from Mirando Field to Houston, Moody-Seagraves interests built lines from White Point at Corpus Christi and from Refugio to Houston. This made a demand for gas but the result of the intensive drilling, was that gas was overproduced. Incidentally it is worth remembering that in consequence of drilling for gas, several new oil pools were opened and the same result can naturally be expected to follow the coming campaign of drilling for gas. The Magnolia Petroleum Co. has 1,200 men working on its line. Work started June 1 and the line was 30 per cent completed by June 20. Contract calls for the line to be ready to deliver gas by October 1, but it at present is ahead of schedule and the line will probably be completed before October 1.

Leasing Campaign

One of the predominating factors in wildcatting in Southwest Texas is the leasing campaign to which reference has been made from time to time in The Oil and Gas Journal and the number of new companies coming into Southwest Texas. More than a dozen lease blocks are now being got up in DeWitt and Lavaca Counties to which no reference has previously been made. Approximately 150,000 acres is being involved. F. P. Zoch and J. F. Richardson have taken one block of 15,000 acres which lease is partly in DeWitt County and partly in Lavaca County, 12 miles southeast of Yoakum. Big Brushy Creek furnishes the northeast line of this block. The first test will go to 3,500 feet.

Shell Petroleum Corp. has recently taken a block of 10,000 acres northwest of this, and Humble Oil & Refining Co. has a block of about the same size north of that. Gulf Production Co. has a block of 10,000 acres on both sides of Brushy Creek and on the Lavaca-DeWitt County line. Further southwest in DeWitt County, a bunch of San Antonio men have 7,000 acres blocked. On Salt Creek in DeWitt County, Shell Petroleum Corp. has 20,000 acres and The Texas Company has a good sized block near them. Acreage has sold from around $1 to $3 an acre. Both counties are purely wildcat with no production nearer than 20 miles from any part of either county.

Doctor Lynch's Gasser

Live Oak County came back to attention lately when Dr. Frank W. Lynch's No. 1 Sawyer, on the Simmons tracts, southwest of Three Rivers in Live Oak

(Continued on Page 149)

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FROM OKLAHOMA TO INDIANA

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Lower left: This scene illustrates the modern method of pipe laying; mill coated and wrapped pipe installed with the mostmodern machinery.

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Wave of Wildcatting on the Gulf Coast

Attempt To Prove Up Findings of Geophysical Exploration Getting Under Way. Half Dozen New Tests

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., July 1.—What promises to be another wave of wildcatting in an attempt to prove up the findings of geophysical exploration is getting under way for the summer in the Coastal territory with the starting up of a half dozen new dome tests scattered over the Gulf Coast, and, with operations increasing in some of the newer pools, particularly in the deep sand areas of several of the older domes, the customary seasonal lull in field development is not expected to be felt this year in this area.

Vacuum Oil Co. late in the week made a location for its third test on the Roanoke Dome prospect in Jefferson Davis Parish, Louisiana. This to be No. 2 DeVilbiss in the northeast corner of Section 14-9s-4w, and approximately 1,100 feet northeast of No. 1. This company also is building a derrick for a rank wildcat in Jefferson County, Texas, No. 1 Herbert-Broussard, in the T.&N.O. Survey No. 208. Both of these tests probably will be very deep as the dome uplift checked by the geophysical instruments was indicated as being deeply seated.

In Liberty County, Harvey Smith and associates are ready to drill on their wildcat, No. 1 Moores Bluff, in an effort to prove the torsion balance dome checked as lying deeply seated about 6 miles west of the Liberty Field and just east of the town of Sheeks. On the north side of the Moss Bluff Dome in the southern part of Liberty County, Pure Oil Co. has started drilling on its No. 1 Liberty Investment Co. This is on the opposite side which Humble Oil & Refining Co. is trying to prove up, the latter company now being on its fifth test there, without finding oil.

Port Neches Dome

The Texas Company is building derricks for its second and third tests on what is known as the Port Neches Dome in the southwestern part of Orange County, where the first test was completed during May as a 1,900-bbl. producer. This company probably will carry on a consistent development program on that area to prove up the field.

The Jennings Field also will see an interesting play for the deep sands particularly on the southeast and northeast. Yount Lee Oil Co. already is starting two new deep tests, one on the southeast and just north of the No. 6 Housierre-Latrielle, recently completed as the Coast's deepest producer, and one on the Crowley tract on the north where the Coast's deepest test now is drilling around 7,500 feet.

Considerable interest from a geophysical standpoint also will be attached to the findings of the Humble Oil & Refining Co. in two deep wildcats which recently have been started on newly checked torsion balance "domes," one near Rosenberg, Fort Bend County, and the other at Genoa, Harris County. This company also is drilling at Mykawa, Harris County, to check the possibility of a dome there.

The past two weeks also have witnessed the starting up of and the drilling of many other wildcat and semiwildcat tests in nearly all parts of the Coastal area, and with other dome development keeping up, the Gulf Coast is showing a trend to more activity which may result in this summer being an important period in what is brought to light.

Checking Calcasieu Parish

The intensive torsion balance play which now is going on in many sections, particularly in Calcasieu Parish, Louisiana, is causing noticeable comment. Calcasieu Parish apparently is being checked from one end to the other and considerable leasing is under way although no new dome prospects have been indicated definitely.

Chief among developments of the past week was the blowing in of The Texas Company's No. 1 Pipkin at Big Hill, Jefferson County, as a gas well of tremendous pressure. This well, on the southeast side of the dome, is the deepest test ever drilled in that area, it being at a total depth of 5,960 feet. Although the volume of gas is only about 1,000,000 feet daily, the well created considerable excitement when it blew out the connections and went wild for several days. The pressure is estimated at 2,500 pounds.

Big Hill is one of the Gulf Coast's oldest known domes, the cap rock having been drilled into as early as 1901, but no commercial production has been found to date, although one well drilled by the Houston Oil Co. in 1923 flowed at the rate of 400 bbls. of clean oil daily for a short time. Drilling at Big Hill has been marked by several gas pocket blowouts but none so large as in The Texas Company's No. 1 Pipkin. This well has been giving trouble and trying to blowout for six weeks and efforts to drill through the gas sand failed.

East Hackberry Back

After being out of the picture for several months, East Hackberry, Cameron Parish, came back with the completion of two good wells, Calcasieu Oil Co.'s No. 14 Watkins and No. 7 Valery, the latter a slight extension. The initial production of each was estimated at between 1,200 and 1,500 bbls. daily, and each was from the 3,800-foot level.

At Pierce Junction, Moody Corp.'s No. 2-A Whitehead was completed late in the week flowing an estimated 1,500 bbls. daily from sand at 4,407 feet with 24 feet of screen in the hole. The oil is 26.7 gravity at 82 degrees. In the same area, Gulf Production Co.'s No. 3 Fitzsimmons-Hamman, a workover, was completed flowing an estimated 725 bbls. daily from sand at 4,753 feet.

Good Well at Refugio

What is looked upon as one of the best wells completed in several months at Refugio is Sun Oil Co.'s No. 1 Rea which was bailed in flowing 700 bbls. of 23 gravity pipe line oil daily from sand at 3,675 feet. The majority of wells in this field have a large salt water content. Also at Refugio, Houston Oil Co.'s No. 7 Wilson Heard was swabbed in at 3,691 feet but made initially only 25 bbls. net oil with about 450 bbls. of salt water. Korona Oil Co.'s No. 1 Reilly, also at Refugio, blew in as a small dry gasser with 715 pounds and is shut in waiting orders.

Barbers Hill Deep Sand

Mills Bennett Production Co.'s No. 1 Smith, discovery well of the deep sand pool on the east side of Barbers Hill, Saturday was flowing at the rate of 300 bbls. net oil after being worked over and deepened to 5,440 feet. This well originally was completed last October flowing an estimated 4,000 bbls. daily at 5,272 feet. This well was the second completion at Barbers Hill during the week, Sun Oil Co.'s No. 2 Chambers in the deep sand pool on the south side, having been brought in earlier in the week flowing 2,400 bbls. daily at 5,489 feet.

Yount Lee Oil Co.'s No. 73 McFaddin, Spindletop, was another good well. It came in flowing at the rate of an estimated 1,600 bbls. daily from sand at 3,275 feet. It is an old well deepened from 3,058 feet. Other completions of the week were Humble Oil & Refining Co.'s No. 6 Brazos, DeWalt, flowing 175 bbls. net oil from sandy shale at 3,450 feet; The Texas Company's No. 5 Wheat, Big Creek, a workover, pumping 200 bbls. at 3,247 feet; Brownie Babbett Oil Co.'s No. 12 McLean, Orange, a workover, pumping 35 bbls. of fluid, 60 per cent oil, 4,029 feet.

Daily Average Production

Daily average production of Gulf Coast fields for the week ending June 29 was:

Texas

	Bbls.
Allen	8
Barbers Hill	9,283
Batson	1,441
Big Creek	4,905
Blue Ridge	4,957
Brenham	235
Boling	1,606
Clay Creek	2,717
Damon Mound	660
DeWalt	12,641
Fannette	751
Goose Creek	5,872
High Island	1,194
Hull	3,466
Humble	5,553
Jasper	35
Markham	330
Nash	465
North Dayton	495
Orange	2,959
Orchard	128
Pierce Junction	17,603
Port Neches	530
Refugio	2,627
Raccoon Bend	6,653
Saratoga	922
Sour Lake	2,733
South Liberty-South Dayton	5,297
Spindletop	27,495
West Columbia	6,995
Total	134,576
Total previous week	133,512
Increase	1,164

Louisiana

Anse La Butte	50
Bayou Bouillon	217
Black Bayou	156
Edgerly	753
Jennings	3,305
Hackberry	4,468
Lockport	3,846
Sorrento	197
Starks	420
Sulphur	1,850
Sweet Lake	315
Vinton	4,176
Welsh	30
Total	19,783
Total previous week	20,593
Decrease	810
Total Gulf Coast	154,459
Total previous week	154,105
Increase	354

GULF COAST FIELDS AND WILDCATS

Week Ended June 29

BARBERS HILL—CHAMBERS COUNTY

Mills Bennett Production Co.'s No. 1 Smith, east flank	Comp. flowing 300 bbls. net oil 5,440 ft.
Mills Bennett Production Co.'s No. 3 Smith	Drlg. shale and lime 3,333 ft.
Mills Bennett Production Co.'s No. 2 Hamman	Drlg. shale 2,711 ft.
Humphreys Corp.'s No. 8-A Kirby, east flank	Drlg. sand and lime 3,521 ft.
Humphreys Corp.'s No. 1-H Kirby, east flank	Drlg. sticky shale 4,398 ft.
Humphreys Corp.'s No. 2-H Kirby, east side	Drlg. gumbo 1,050 ft.
Humphreys Corp.'s No. 3-H Kirby, east side	Spudded.
Humphreys Corp.'s No. 1 Tarbutton, east flank	Sidetracking 1,615 ft.; total depth 4,350 ft.
Humphreys Corp.'s No. 1 Illfrey, east flank	Drlg. shale and lime 2,975 ft.
Moody Corp.'s No. 1 Illfrey	Drlg. gumbo 342 ft.
Republic Production Co.'s No. 1 Kirby, south flank	Coring 4,596 ft.
Rexal Oil Co.'s No. 2 McLean, east flank	Drlg. shale 4,347 ft.
Rexal Oil Co.'s No. 1 Smith, east flank	Drlg. gumbo and lime 3,955 ft.
Sun Oil Co.'s No. 2 Chambers, southwest	Comp. flowing 2,400 bbls. pipe line oil 5,489 ft.
Sun Oil Co.'s No. 1 Chambers, southwest	Comp. flowing 200 bbls. 5,708 ft.
Talbert & Markle's No. 1 Schilling	Cem. casing 5,075 ft.; to test oil sand 5,174 ft.
Yount Lee Oil Co.'s No. 4 Chambers, southwest	Drlg. shale 6,651 ft.
Yount Lee Oil Co.'s No. 7 Chambers, south	Rigging up.

BOLING—FORT BEND AND WHARTON

South Texas Pet. Co.'s No. 6 Bay, northeast	Drlg. heaving shale 4,024 ft.; abnd.
Sun Oil Co.'s No. 6 E. C. Farmer, east	Drlg. hard sand 3,837 ft.
Sun Oil Co.'s No. 7 E. C. Farmer, east	Drlg. cap rock 1,401-25 ft.
The Texas Company's No. 1 Bushnell, northeast	Reaming 4,224 ft.
The Texas Company's No. 2 Pleasants, northwest	Rig up.
Vacuum Oil Co.'s No. 3 Taylor, south side	Drlg. shale and boulders 2,205 ft.

RACCOON BEND—AUSTIN COUNTY

Humble Oil & Refg. Co.-Valley Oil Corp.'s No. 4 Hardy	Drlg. sandy shale 3,336 ft.
Humble & Valley's No. 5 Hardy	Derrick.
Humble & Valley's No. 3 Saunders	Waiting cement to set 3,191 ft.
Humble & Valley's No. 1 Buchanan	To pump 3,570 ft.
Humble & Valley's No. 2 Buchanan	Derrick.
Humble & Valley's No. 2-A Bracey	Set liner to test 3,559 ft.
Humble & Valley's No. 1-A Mitchell	Drlg. sandy shale 3,342 ft.
Humble & Valley's No. 1-B Mitchell	Drlg. sandy shale 2,869 ft.
Humble & Valley's No. 2 Stravoski	Drlg. hard sand 2,540 ft.
Humble & Valley's No. 1-B Koehn	Drlg. shale 489 ft.
Humble & Valley's No. 3 Walton	Cem. surface casing 183 ft.
Humble & Valley's No. 1-B Walton	Location.
Humble & Valley's No. 4 Walton	Location.
Humble & Valley's No. 4 Thompson	Drlg. shale and lime 2,720 ft.
Humble & Valley's No. 3 Dietrichs	Drlg. sticky shale 1,413 ft.
Humble & Valley's No. 4 Dietrichs	Location.
Humble & Valley's No. 1 Jackson	Drlg. hard sand and shale 1,454 ft.
Humble & Valley's No. 1 Mahnki	Drlg. shale 979 ft.
Humble & Valley's No. 4 Austin College	Rig.
Humble & Valley's No. 1 Graneau	Location.
Humble & Valley's No. 2 Bellville School	Rig.
Humble & Valley's No. 2 Woodley	Rig.
Humble & Valley's No. 2 Mueller	Cem. surface casing 171 ft.
Humble & Valley's No. 2-B Grawunder	Rig.
Humble & Valley's No. 3 Reese	Drlg. rock 143 ft.
Humble & Valley's No. 4 Gotosky	Derrick.

DE WALT—FORT BEND COUNTY

Humble Oil & Refg. Co.'s No. 8 Sugarland	Drlg. sandy shale 3,300 ft.
Humble Oil & Refining Co.'s No. 3 Nelson	Cem. casing 3,393 ft.
Humble Oil & Refining Co.'s No. 4 Nelson	Cem. casing 3,570 ft.
Humble Oil & Refg.'s No. 4 Camp	Testing oil showing sandy shale 3,536 ft.
Humble Oil & Refg.'s No. 6 Brazos	Comp. flowing 175 bbls. 3,450 ft.
Humble Oil & Refg. Co.'s No. 7 Brazos	Derrick.
Humble Oil & Refg.'s No. 1-B Deatherage	Drlg. sand rock 3,803 ft.
Humble Oil & Refining Co.'s No. 1 Hamner fee	Sandy shale showing oil; set casing 3,441 ft.; drlg. 3,636 ft.

(Continued on Page 149)

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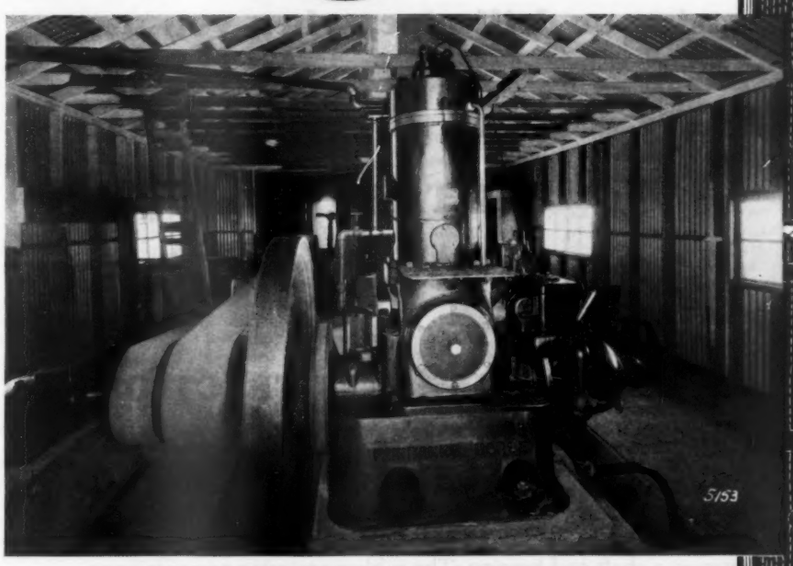

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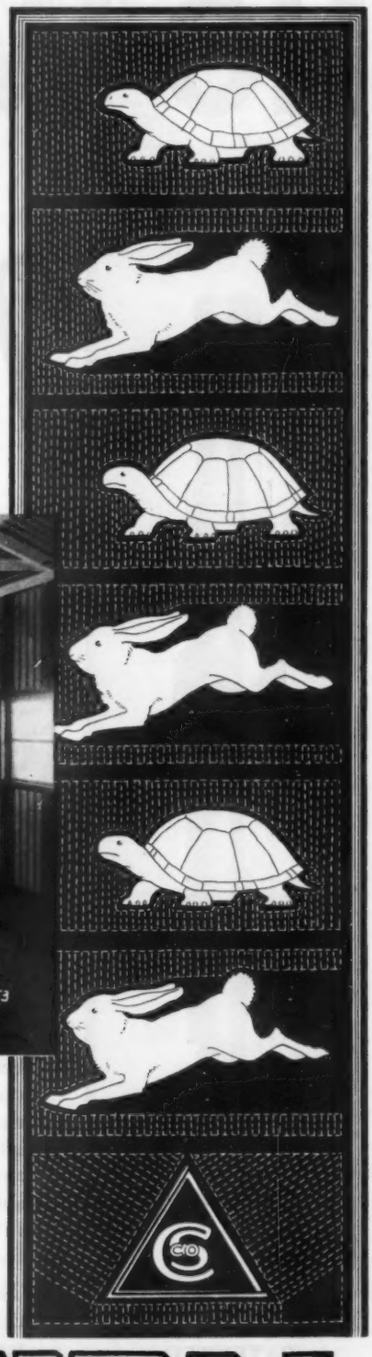

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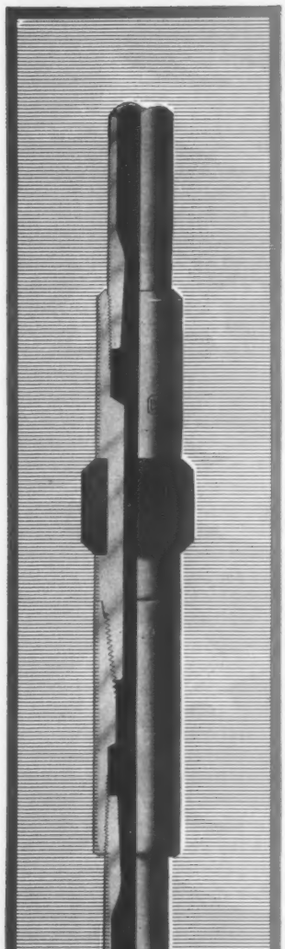

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EMSCO STEEL EQUIPPED WELLS ARE SAFE

Rapid Developments in California

In Addition to Increase in Production Following Removal of Restrictions Several Wildcats Indicate Possible Discoveries

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., June 29.—The past month has been exceptionally interesting in California due to developments of unusual importance. Several wildcats have exhibited evidences of possible new discoveries and development work in proven fields has continued unabated with numerous large flowing wells completed. State production has shown a consistent increase and a further gain is imminent due to the lifting of crude oil curtailment measures on June 22 by Umpire F. C. van Deinse following an unsuccessful attempt to effect a mutual co-operative reduction in production by operators extending over a period subsequent to April 22, 1929. State production showed another substantial increase this week due to a general resumption of operations following the lifting of restrictions and also to the opening up of crude oil production in the Seal Beach Field where a concerted attempt had been made to prolong the curtailment period through a gentleman's agreement between interested operators.

Fred G. Stevenot, director of the California Department of Natural Resources, has just followed the unfavorable culmination of curtailment by issuing a definite ultimatum to all California producers advising them that gas waste must be eliminated on or before August 31, 1929. It was the original intention to put the recently enacted gas conservation legislation into effect on August 18 but this was delayed to give producers the benefit of a 60-day period in which to perfect projected gas conservation work, as a result of which surplus production of natural gas could be reduced and gas waste eliminated by mutual co-operation between operators. State officials are desirous that producers effect the desired result by mutual co-operation if possible as this would undoubtedly be more satisfactory and eliminate the necessity of arbitrarily enforcing the State's police powers. August 31, however, has been definitely set as the deadline beyond which no gas waste will be tolerated.

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	73,650	10,521	.....	.....	566,045	2,300,322
Fuel oil	.....	.....	.....	.....	49,950	111,621
Diesel and gas oil	.....	.....	.....	.....	913,200	1,009,077
Gasoline	528,781	75,540	754,872	107,839	10,374,999	6,097,827
Naphtha distillate	.....	.....	.....	.....	81,750	76,500
Coastwise—						
Crude oil	384,297	54,900	386,711	55,244	11,427,709	11,243,572
Fuel oil	349,480	49,926	350,426	50,061	10,882,958	8,633,263
Diesel and gas oil	2,253	322	22,550	3,221	692,340	673,123
Gasoline	124,538	17,791	146,854	20,979	5,246,597	3,510,288
Kerosene	1,928	275	3,588	513	35,972	49,950
Naphtha distillate	.....	.....	.....	.....	.....	171,566
Exports—						
Crude oil	75,231	10,744	216,592	30,942	2,562,252	1,193,310
Fuel oil	272,655	38,951	485,071	69,296	9,227,881	12,406,631
Diesel and gas oil	36,925	5,275	47,365	6,752	1,453,910	1,402,523
Gasoline	316,583	45,226	159,658	22,808	5,406,708	2,851,085
Kerosene	62,725	8,961	.....	.....	1,462,980	2,256,328

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC, GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	.....	342,425
Gasoline	.....	.....	.....	.....	1,050,732	1,279,497
Lubricants	.....	.....	.....	.....	.....	208,024
Coastwise—						
Fuel oil	.....	.....	.....	.....	1,223,221	2,177,789
Diesel and gas oil	.....	.....	.....	.....	289,770	161,051
Gasoline	168,714	24,102	68,087	9,727	2,390,195	2,198,704
Kerosene	.....	.....	.....	.....	53,460	108,677
Exports—						
Crude oil	.....	.....	.....	.....	121,603	79,199
Fuel oil	.....	.....	.....	.....	256,029	1,397,676
Diesel and gas oil	.....	.....	.....	.....	155,474	10,400
Gasoline	.....	.....	170,009	24,287	2,937,649	2,304,648
Kerosene	.....	.....	91,554	13,079	382,417	307,089
Lubricants	.....	.....	.....	.....	21,899	11,400

Director Stevenot's Letter

The letter directed to all California operators by Director Stevenot states that, "On May 29, by general circular to all operators, attention was drawn to California's new gas conservation law. Since that time careful study has been made of the grave situation which occasioned this legislation. In fairness to operators and lessors affected it is deemed appropriate to advise you at this time of the steps proposed to be taken by the State. The clear purpose and intent of the law is to put a stop to the blowing of natural gas into the air, with its consequent wastage, and this leaves no discretion to the administrators of the law. Approximately 600,000,000 feet of natural gas is now being blown into the air daily in California. Such wastage of a valuable resource must not be allowed to continue. The law deals only with the wastage of natural gas, still, as the present enormous blowing of gas into the air is partially caused by an overproduction of oil considered far in excess of market requirements, the elimination of unnecessary wastage of gas will consequently reduce in some measure this surplus.

"The act forbids and declares to be unlawful the unreasonable wastage of natural gas. Blowing natural gas into the air is presumptive unreasonable. Enforcement of the prohibition lies in court injunction action by the State to this end, being authorized by the act either before or after an administrative hearing by the oil and gas supervisor. If, after August 31, 1929, there is any natural gas being blown into the air and thus wasted in the field, it is the intention and purpose of the State immediately to proceed with all the means provided by the law to provide such wastage. This notice will give the lessors and operators full 60 days' time within which to make arrangements to meet the requirements of the new statute. It is earnestly hoped that the industry will recognize the important question of public policy underlying this legislation and make it unnecessary to institute proceedings; but if not, the full power and authority of the State will be invoked on the date specified."

Kettleman Hills Curtailment

The curtailment plan submitted to Kettleman Hills operators for ratification a few days ago by the committee of seven appointed several weeks ago failed to meet with general approval and the recommendations were referred back to the committee for further consideration. The committee of seven appointed by Kettleman Hills operators to work out a definite basis of curtailment and conservation consists of E. D. Reiter, chairman; P. M. Longan, W. L. McLaine, R. N. Ferguson, W. H. Berg, J. H. Raney and Ellsworth McGowan. The original recommendations brought back by the committee failed to satisfy Dr. George Otis Smith, representing Secretary of the Interior Ray Lyman Wilbur and the committee was instructed to go into direct conference in an effort to effect a definite plan mutually agreeable to all concerned. Considerable difference of opinion developed at the latest general meeting of Kettleman Hills oprators held in the offices of Umpire van Deinse on June 26 and it begins to look as though the only hope of arriving at a satisfactory agreement lies in the granting of special privileges to certain operators. Secretary of Interior Wilbur apparently desires a general cessation of drilling and is holding a whip hand because of the uncertain status of federal prospecting permits. The effectiveness of this coercive feature remains to be seen as not all operators are over the well known barrel and future curtailment work depends upon their attitude.

Promising Wildcats

Several wildcats this week showed evidence of ultimately resulting in production and, while none of these prospecting holes has been finished up to the present, do not be surprised if one new field and possibly two productive areas are proven up in the near future. One of the most promising wells under way is the Western Gulf's wildcat on the Hollister ranch, about 45 miles west of Santa Barbara, 6 miles west of Gaviota Pass and about 10 miles from Point Conception where the Standard instituted exploration work several weeks ago. The Gulf's Santa Barbara County wildcat blew in prematurely early in the week flowing at the rate of approximately 25,000,000 feet of natural gas daily from 3,115 feet. The well was subsequently brought under control after considerable quantities of hematite had been pumped into the hole and it is the present intention to undertake another cement job as the first attempt was probably ineffective in as much as the well was making some water along with the natural gas for several days. A string of 10¾-inch had been landed in this well at 3,088 feet previous to the blowout after 15 feet of fairly good looking sand had been cored. The potentiality of the sand logged is still unknown as the well blew in while the cement was being drilled out but the showing is extremely encouraging.

The Carpenteria area of Santa Barbara County looks good from an exploration standpoint as Continental Oil Co.'s No. 2 Carpenteria, on Kittie Baillard property, is showing gas in increasing quantities with depth and appears to be correlating a little higher up on the structure than the company's No. 1 Carpenteria, which registered such a high gas pressure it had to be shut in. No. 1 Carpenteria was mudded off a few months ago after running wild for several days but the pressure on this well has recently built up to 1,900 pounds, notwithstanding it has been standing shut in.

The Marland company focused the attention of operators on Monterey County last week when preliminary preparations were started to test out its Bradley wildcat, located in Section 32-24-11. This well, while it does not look any too hot, is the best looking well under way in this part of the State and may possibly reveal the existence of a new field when given a chance to make a bid for production during the next few weeks.

MOUNT PLEASANT FIELD GETTING BIGGER PLAY THAN MUSKEGON

By Special Correspondent

MUSKEGON, Mich., June 29.—A new oil producer completed in the Dundee sands last week kept the daily flow of the Mount Pleasant, Mich., Field up to 2,500 bbls. and made the record of the field 15 oil wells, 2 dry holes and 1 abandoned hole.

With 26 wells active, either moving in rigs, rigging up, spudding, drilling or fishing and 13 new locations, of which 11 were made by the Pure Oil Co., discoverers of the field, Mount Pleasant is getting a greater drilling play than the Muskegon Field.

Three wildcat wells in Isabella and Midland Counties also are rigging up while two new locations were announced for Isabella.

The new producer was Stilgenbauer and Russell's No. 2 F. W. Stork, or Coon, SE NE Section 12-14n-3w, Chippewa Township, Isabella County. It came in at 3,530 to 3,545 feet making 350 bbls. initial. The Dundee lime was topped at 3,500 feet. No. 1 was a 750-bbl. initial producer in the same pay.

The Leonard Oil and Gas Co.'s No. 2 Virgil McClintic, SE SE Section 11-14-3, had a show in the upper Traverse after topping the formation at 2,932 feet. It was drilling ahead at 3,100 feet.

J. F. Markle, trustee's No. 1 John McNeal, NE SE Section 9-14-3, Chippewa Township, looked dry when the Dundee was topped at 3,740 feet, more than 200 feet low. It may be plugged back for a fair show in the upper Traverse. It is about 3 miles west of production.

J. C. Arthur's No. 1 Weidman, NE SW Section 12-14-3, Chippewa Township, which last week came in as a 200-bbl. well in the upper Traverse at 3,040 feet, is cased off and drilling to the Dundee to produce through two strings of pipe from the two pay sands at the same time.

Of the 14 new locations, the following will be drilled for the Pure Oil Co.: No. 3 and No. 4 Fox, NE NE Section 13-14n-3w, Chippewa Township; No. 1 Schurtzer, SW SW Section 1-14-3; No. 1 Davis, SE SE Section 2-14-3; No. 4-A and 5-A Reem, SE SE Section 12-14-3; No. 4-B Reem, NE SE Section 12-14-3; No. 1-B and 2-B State, NE SE Section 2-14-3; No. 1 DeStoop, SW NW Section 1-14-3; and No. 1-C Reem, NW SW Section 7-14-2, Greendale Township, Midland County. All but the last are located in Chippewa Township, Isabella County. Other new locations are: J. C. Arthur's No. 1 and 2 Bailey-Hall, NW NE Section 13-14-3; Holsinger and Jordan's No. 1 Crowell, SE NW Section 5-14-3, Chippewa Township, and J. F. Markle, Trustee's No. 1 Graham, NW NW Section 33-15-3, Wise Township.

Wildcat Tests

Wildcat drilling operations throughout Michigan are rapidly increasing. South-

(Continued on Page 148)

In addition to the hard porous coarse grained sand logged, this well has shown encouraging quantities of gas.

Santa Fe Springs

Although the peak has not yet been reached in the O'Connell horizon at Santa Fe Springs, operators are already contemplating Clarke zone development and with several producing wells already completed in this sand it is probable additional deeper zone completions can be anticipated in the near future. Recent developments have indicated the probability that the Clarke zone is an horizon of exceptionally high gas pressure and potentially productive of large flowing wells. The completion of several wells around the edge of the field has confirmed original predictions that the Clarke zone would be the largest horizon in areal extent of any sand developed in the Santa Fe Springs Field. The Clarke zone will prove a vital factor in subsequent field production, although it may not reach the maximum daily production attained by the Meyer or O'Connell horizons. The extreme depth at which the Clarke sand is encountered, approximately 8,000 feet, and the drilling hazards necessarily resulting from this deep zone development will tend to retard the attainment of an excessive peak but should result in a better sustained production. The high points reached by shallower zones have been due primarily to intensive development and can be attributed directly to the completion of a relatively large number of producing wells within a short period. It is improbable the Clarke horizon will be as intensively developed as the upper zones and while this will result in a smaller recovery per acre it will be reflected in a larger average ultimate production per well and much more favorable economic production.

There were several good wells finished at Santa Fe Springs during the week and a number of others are being prepared for immediate completion. The General Petroleum has displaced The Texas Company as the largest single producer at Santa Fe Springs and this position was further strengthened this week by the completion of four wells. The General Petroleum's latest completions at Santa Fe Springs were No. 114 Jalk, No. 145-B on the Springs lease and Nos. 218 and 222 on the Santa Fe property leased from the Santa Fe Railroad. This quartet boosted the General Petroleum's daily production 12,620 bbls. and increased the company's current pipe line runs to 64,000 bbls. per day. No. 218 Santa Fe was an exceptionally good well as it tanked 7,890 bbls. of unusually clean 34.2 gravity oil during the initial 24-hour test from 6,940 feet and is yielding 10,000,000 feet of wet gas in addition. No. 145-B Santa Fe is also yielding substantial production as it blew in barefoot doing 4,060 bbls. of clean 33.6 gravity oil and approximately 15,000,000 feet of saturated gas daily from 6,853 feet. No. 222 Santa Fe and No. 114 Jalk were relatively small producers. The former tanked 230 bbls. of clean 33.1 gravity oil daily from the Buckbee zone at 5,850 feet, while the latter came in flowing 440 bbls. daily from the Clarke horizon at 7,530 feet. The small production shown by No. 114 Jalk in the deep Clarke horizon is probably due to its rather unfavorable position structurally, as this zone can be expected in substantial production nearer the apex of the structure.

The Texas Company Active

Although the General Petroleum has displaced The Texas Company as the premier producer at Santa Fe Springs, the latter was not idle during the week as it is working on 12 potential deep zone producers. This company recompleted two wells and boosted its current production to 55,500 bbls. daily. The Texas Company's two rejuvenated producers were No. 11 on Mattern Lease No. 3, which was returned to production flowing 4,290 bbls. of 33.5 gravity oil and 7,400,000 feet of gas daily after being redrilled and deepened to the O'Connell zone at 6,898 feet, and No. 2 Mutual, recompleted flowing 570 bbls. daily after being cleaned out to bottom 6,697 feet. The Texas Company has several other potential producers nearing completion and three should be tanking oil shortly as they are in the oil sand. The Standard Oil Co., which has been rather slow in participating in deep zone development, doubled its current deep zone production by bringing in No. 11 Walker flowing 6,515 bbls. of relatively clean 33.3 gravity oil and 4,100,000 feet of wet gas daily from the O'Connell zone at 6,875 feet. The company also concluded drilling operations on No. 13 Walker and substantial production is anticipated upon the completion of this new well within a few days. No. 7 Hepler, No. 8 Jordan, No. 8 Koontz and No. 25 South Whittier Community are also in the pay and should be finished soon.

On of the most important recent completions in the Santa Fe Springs Field was Oscar Howard's No. 6 Hathaway, given a prelimary production test 10 days ago. This new producer proves up the deep Clarke zone for substantial production, notwithstanding its current production, 3,700 bbls. daily from 8,006 feet, is cutting 30 per cent water. George F. Getty recompleted No. 8 Parcell doing 4,660 bbls. of exceptionally clean 34.2 gravity oil daily from the O'Connell zone at 6,680 feet and will probably chalk up another completion next week. The Globe Petroleum's No. 1 Estel & Jameson proved a distinct disappointment upon completion in the upper part of the O'Connell zone at 6,550 feet as it registered an initial daily production of only 1,780 bbls. of clean 32.3 gravity oil and 1,600,000 feet of natural gas. This project is located south of the four corners in an area where several producers have been finished doing around 10,000 bbls. each.

Seal Beach

Daily production of the Seal Beach Field, which has been consistently increasing for the past few months due to increased development work after a dormancy of more than a year, reflected the completion of two wells during the past week and will probably experience a further stimulation. The increase shown in daily production between April 22 and June 22 has occurred in spite of the fact that the Associated, Marland and Standard complied with each and every order issued by Umpire F. C. van Diense. These three companies curtailed approximately 10,000 bbls. of daily production in this field in conformity with regulations established by the umpire but this was opened up again a few days ago. The spirit of co-operation which has existed during the development of Seal Beach was conspicuous during the recent curtailment movement and these three companies have consummated a gentleman's agreement to refrain from competitive drilling in this district and thus limit production, notwithstanding statewide regulation of production has been discontinued. Drilling operations in the older section of the Seal Beach Field have never reached the competitive stage and, although additional completions will be chalked up from time to time during the next several months, development at present is along conservative lines.

That curtailment activities in the Seal Beach Field have been successful is evidenced by the fact that daily production jumped approximately 10,000 bbls. per day when the gentleman's agreement was abrogated a few days ago. This daily production could be easily doubled by additional development work if necessity demanded. This possibility will not become a reality, however, as the Associated, Marland and Standard are limiting development work and holding back production until a more opportune time. The two wells put on production during the past week were No. 21 San Gabriel of the Standard Oil Co. and No. 2 Bryant of the Associated. The former, a new well, was brought in flowing 1,470 bbls. clean 26.4 gravity oil daily from 5,417 feet, while the latter, a recompletion, was returned to production flowing 1,750 bbls. daily from 5,650 ft. No. 2 Bryant was originally finished in March, 1927, flowing 920 bbls. per day from 4,380 feet and subsequently recompleted flowing 1,750 bbls. daily from 4,490 feet.

Rosecrans

Drilling operations in the Rosecrans Field resulted in the completion of two new wells during the past week and two more are expected to be finished soon. Development work has been kept down to an absolute minimum by the Union and Barnsdall for two years and existing restrictions will be continued. These two companies, which discovered the Rosecrans Field and control the greater part

(Continued on Page 147)

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well, location—	S-T-R	Depth	Status
Standard, No. 5-9- Saticoy, Ventura Co.	10- 2-22	7,052	br. sh. drilling
American Oil Co., No. 1 Camarillo, Ventura Co.	33- 2-20	1,200	suspended
Bolsa Chica, No. 1-A Temescal, Ventura Co.	4- 4-18	466	hd. sd. drilling
Superior Oil Co., No. 1 Santa Paula, Ventura Co.	14- 4-21	520	suspended
Craise, F. A., No. 1 South Mountain, Ventura Co.	17- 3-21	Rig	suspended
Miley, E. J., No. 2 Red Mountain, Ventura Co.	7- 3-23	1,480	hd. sd. drilling
Shell, No. 1 Simi, Ventura Co.	31- 3-17	2,914	redrilling
Continental, No. 1 Sulphur Mountain, Ventura Co.	21- 4-22	3,765	suspended
Continental, No. 2 Sulphur Mountain, Ventura Co.	22- 4-22	6,740	suspended
Continental, No. 3 Sulphur Mountain, Ventura Co.	21- 4-22	1,170	sd. sh. drilling
Lockwood Oil Co., Well No. 1, Ventura Co.	28- 8-21	120	sd. drilling
Milham Explth., No. 1-A Buttonwillow, Kern Co.	8-28-23	4,662	gas well, idle
Milham Explth., No. 2 Buttonwillow, Kern Co.	8-28-23	2,730	gas well, idle
Milham Explth., No. 3 Buttonwillow, Kern Co.	8-28-23	2,694	gas well, idle
Milham Explth., No. 4 Buttonwillow, Kern Co.	6-28-23	2,670	gas well, idle
Milham Explth., No. 5 Buttonwillow, Kern Co.	5-28-23	2,500	gas well, idle
Milham Explth., No. 6 Buttonwillow, Kern Co.	8-28-23	2,676	gas well, idle
Milham Explth., No. 7 Buttonwillow, Kern Co.	6-28-23	2,720	suspended
Milham Explth., No. 8-A Buttonwillow, Kern Co.	8-28-23	2,673	gas well, idle
Milham Explth., No. 9 Buttonwillow, Kern Co.	8-28-23	406	sd. drilling
Milham Explth., No. 10 Buttonwillow, Kern Co.	8-28-23	Rig	rigging up
Aldrich, D. C., No. 1 Buttonwillow, Kern Co.	12-28-23	Mtl.	grading
Lincoln Drlg. Co., No. 1 Buttonwillow, Kern Co.	6-28-23	190	suspended
Richfield Oil Co., No. 2 Semitropic, Kern Co.	36-27-23	7,380	br. sh. drilling
Stabler, W. W., No. 1 Comanche Point, Kern Co.	23-32-29	3,409	suspended
Elmer Oil Co., No. 1 Shafter, Kern Co.	8-28-25	6,100	suspended
Elmer Oil Co., No. 1 Bena, Kern Co.	15-30-30	2,804	hd. sd. drilling
Elmer Oil Co., No. 1 Rosedale, Kern Co.	33-29-26	2,781	abandoned
Taft Drlg. Co., No. 1 Union Avenue, Kern Co.	2-30-27	2,940	sd. sh. drilling
Shell Oil Co., No. 1 Lerdo, Kern Co.	5-29-27	3,770	recemented
General Pet., No. 1 McFarland, Kern Co.	25-26-25	5,560	br. sh. drilling
Union, No. 2 San Emidio, Kern Co.	5-10-21	3,650	br. sh. drilling
Currency Pet. Co., No. 1 Jacalitos, Fresno Co.	28-21-14	2,302	sd. sh. drilling
Currency Pet. Co., No. 2 Jacalitos, Fresno Co.	14-21-14	350	sd. sh. drilling
Hornaday & Huggins, No. 1 Kerman, Fresno Co.	32-14-18	3,715	cleaning out
K. C. L. Oil Co., No. 1 Joaquin Ridge, Fresno Co.	7-19-15	114	suspended
Oceanside Oil Co., No. 1 Krayenhagan, Fresno Co.	33-22-17	738	redrilling
Petroleum Securities, No. 1 Kerman, Fresno Co.	20-20-16	Mtl.	suspended
Petroleum Securities, No. 2 Kerman, Fresno Co.	20-20-16	555	sd. drilling
Shell Oil Co., No. 1 Westhaven, Fresno Co.	24-19-18	1,570	survey hole
Shell Oil Co., No. 2 Westhaven, Fresno Co.	26-19-18	1,380	survey hole
Shell Oil Co., No. 3 Westhaven, Fresno Co.	27-19-18	716	survey hole
Shell Oil Co., No. 4 Westhaven, Fresno Co.	17-19-19	50	survey hole
Union, No. 1 Huasna, San Luis Obispo Co.	34-32-15	3,700	suspended
Union, No. 1 North Huasna, San Luis Obispo Co.	12-32-14	3,540	redrilling
Midwest Refining Co., No. 1 Huasna, San Luis Obispo Co.	34-31-15	960	sd. sh. drilling
Panorama Oil Co., Well No. 1, San Luis Obispo Co.	7-31-21	3,914	br. sh. drilling
Garliepp, Fred, No. 1 Betteravia, Santa Barbara Co.	20-10-35	Rig	rigging up
Shell, No. 3 Guadalupe, Santa Barbara Co.	25-10-35	1,910	redrilling
Shell, No. 4 Guadalupe, Santa Barbara Co.	36-10-35	1,900	sd. sh. drilling
Shell, No. 2 Goleta, Santa Barbara Co.	36- 5-31	4,500	sd. sh. drilling
Petroleum Securities, No. 1 Goleta, Santa Barbara Co.	.....	3,070	sd. sh. drilling
Union, No. 1 Buel Canyon, Santa Barbara Co.	X- 7-31	1,622	hd. sd. drilling
O'Neil, L. B., No. 1 Los Alamos, Santa Barbara	X- 8-32	.....	location
Western Gulf, No. 1 Point Conception, Santa Barbara Co.	X- 5-33	3,115	blew out
Standard, No. 1 Point Conception, Santa Barbara Co.	X- 5-34	2,428	suspended
Nevada Standard, No. 1 Goleta, Santa Barbara Co.	10- 4-28	4,540	gr. sd. drilling
General Pet., No. 1 Elwood, Santa Barbara Co.	21- 4-28	3,912	br. sh. drilling
Pacific Western, No. 1 Naples, Santa Barbara Co.	7- 4-29	2,703	sd. sh. drilling
Padre Oil Co., No. 1 Dos Pueblos, Santa Barbara Co.	18- 4-27	3,285	br. sh. drilling
System Oil Co., No. 1 Orcutt, Santa Barbara Co.	36-10-34	3,168	hd. sd. drilling
Keystone Oil Co., No. 1 Santa Maria, Santa Barbara Co.	33-10-34	101	sd. drilling
American Oil Co., No. 1 Summerland, Santa Barbara Co.	33- 4-25	809	suspended
Getty, Geo. F., No. 2 Summerland, Santa Barbara Co.	22- 4-26	Rig	rigging up
Lincoln Drlg. Co., No. 1 Summerland, Santa Barbara Co.	22- 4-26	960	br. sh. drilling
Keystone Oil Co., No. 1 Surf, Santa Barbara Co.	18- 7-35	Rig	rigging up
Gaviota Oil Co., No. 1 Surf, Santa Barbara Co.	18- 7-35	.....	location
Shell, No. 1 Summerland, Santa Barbara Co.	18- 4-25	Mtl.	suspended
Channel Oil Co., Well No. 1, Santa Barbara Co.	29- 4-27	6,304	suspended
Channel Oil Co., No. 1 Fellowship, Santa Barbara Co.	29- 4-27	1,080	redrilling
Continental, No. 1 Carpenteria, Santa Barbara Co.	33- 4-25	4,130	gas well
Continental, No. 2 Carpenteria, Santa Barbara Co.	33- 4-25	3,675	heavy gas
Colusa Oil Co., Well No. 1, Colusa Co.	31-15- 4	618	hd. sd. drilling
Italo American, Well No. 1, Colusa Co.	20-13- 3	775	hd. sd. drilling
North Counties Oil Co., Well No. 2, Humboldt Co.	36- 2- 1	2,205	suspended
Humboldt Oil Co., Well No. 1, Humboldt Co.	6- 2- 1	3,041	redrilling
Applegate & Renshaw, Well No. 1, Merced Co.	24- 6-10	3,730	hd. sd. drilling
Kuhns, H. L., Well No. 1, Merced Co.	8-12-19	624	gr. sd. drilling
Calhoma Oil Co., No. 1 Livermore, Alameda Co.	9- 3- 3	1,549	will test
Shell, No. 1 Dudley, Monterey Co.	15-22- 9	3,090	sd. sh. drilling
Union, No. 1 San Lucas, Monterey Co.	8-22- 8	1,018	sd. sh. drilling
Standard, No. 1 King City, Monterey Co.	X-21- 8	.....	location
Marland, No. 1 Bradley, Monterey Co.	32-24-11	5,930	will test show
Tuck Oil Co., No. 1 Los Gatos, Santa Clara Co.	15- 8- 1	852	suspended
Dudley Ridge Synd., No. 1 Tulare, Kings Co.	12-23-19	1,305	gas, shut in
O'Donnell, J. E., No. 1 Tulare, Kings Co.	7-23-20	.....	location
Associates Pet., No. 1 Lewis Creek, San Benito Co.	5-19-10	501	suspended

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

The Texas Company, No. 1 Clearwater, Los Angeles Co.	8- 4-12	1,011	sd. sh. drilling
Standard, No. 1 Hawthorne, Los Angeles Co.	5- 3-14	5,364	gr. sd. drilling
Circle Oil Co., No. 1 Gardena, Los Angeles Co.	23- 3-14	4,280	suspended
Allied Pet., No. 1 Redondo, Los Angeles Co.	28- 3-14	5,650	br. sh. drilling
Hummel, Joseph, No. 1 Redondo, Los Angeles Co.	28- 3-14	.....	location
Jackson, R. W., No. 1 Whittier, Los Angeles Co.	19- 2-11	1,477	set pipe
Burlingham Pet. Co., No. 1 Compton, Los Angeles Co.	17- 3-13	2,204	cleaning out
Lee & Brainerd, No. 1 Rosecrans, Los Angeles Co.	17- 3-13	Mtl.	building rig
Hansen, N. J., No. 1 Watson, Los Angeles Co.	17- 4-13	Rig	suspended
Easton & Smith, No. 1 Calabases, Los Angeles Co.	19- 1-17	2,982	suspended
Pugh Miller Drlg. Co., No. 1 Calabasas, Los Angeles Co.	6- 1-17	2,550	suspended
Russell Oil Co., No. 2 Joughin, Los Angeles Co.	25- 3-17	1,704	redrilling
Pomona Oil Co., Well No. 1, Los Angeles Co.	32- 1- 8	1,160	hd. sd. drilling
Beard, G. F., No. 1 Brea Canyon, Los Angeles Co.	30- 2- 9	370	sd. sh. drilling
Anchor Oil Co., No. 1 Puente, Los Angeles Co.	19- 2-10	4,820	suspended
Rucker, R. C., No. 1 Puente, Los Angeles Co.	27- 2-10	1,508	sd. sh. drilling
Urmi Oil Co., No. 1 Puente, Los Angeles Co.	31- 3- 8	Rig	rigging up
Shell, No. 1 Coyote, Los Angeles Co.	28- 3-10	2,944	sd. sh. drilling
Prairie Oil Co., No. 1 Montebello, Los Angeles Co.	32- 1-12	3,061	sd. sh. drilling
Monterey Park, No. 1 Jepson, Los Angeles Co.	25- 1-12	4,160	sd. sh. drilling
Union Oil Co., No. 1 Richfield, Los Angeles Co.	13- 3- 9	788	sd. drilling
Southwestern Drlg. Co., No. 1 Richfield, Los Angeles Co.	21- 3- 9	5,249	plugging back
Anderson, P. B., No. 1 Hasley Canyon, Los Angeles Co.	1- 3-16	490	cleaning out
So. Calif. Drlg. Co., No. 1 Newhall, Los Angeles Co.	13- 3-16	140	sd. sh. drilling
Pico Dome, No. 1 Hasley Canyon, Los Angeles Co.	14- 3-16	646	hd. sd. drilling
Calif. Eastern, No. 1 Wickham, Los Angeles Co.	32- 5-17	3,517	suspended
Coastline Oil Co., No. 1 Devil Canyon, Los Angeles Co.	21- 5-17	514	suspended
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	4,520	gr. sd. drilling
Hall Pet. Co., No. 1 Murrietta, Riverside Co.	23- 7- 3	975	skid rig
Hemet Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	3,266	hd. sd. drilling
Imperial Valley Oil Co., Well No. 1, Imperial Co.	32-11-10	2,980	cleaning out
Davenport Oil & Gas Co., No. 1 San Marcos, San Diego Co.	30-12- 8	847	suspended
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	1,972	suspended
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	X-13- 4	Mtl.	building rig

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Descriptive Bulletin
No. 62
On Request

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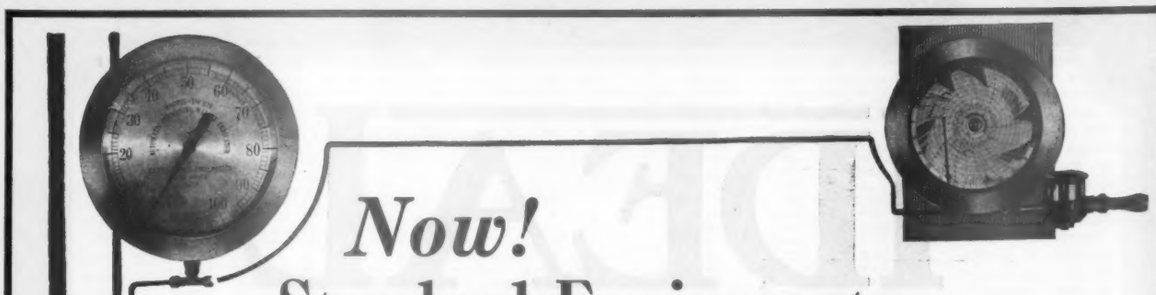

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Yates Extended Three Quarters Mile

Proration Continued and Allowable Production Increased to 130,000 Bbls. Showing in Mitchell County Wildcat

By L. E. Bredberg
Staff Correspondent, West Texas Fields

FORT WORTH, Tex., July 1.—A three-quarter of a mile extension to the Yates Pool, on the southwestern end, and a showing in a deep wildcat test in Mitchell County, with more interest being displayed in the area around the Taylor-Link discovery in Pecos County, held the stage in the West Texas district during the week.

Three new peaks made by the Continental's No. 1-B University, formerly the Texon Oil & Land Co.'s No. 1-B, also created interest when the last and highest peak was set at 2,665 bbls., after setting one for 2,642 and a later one for 2,660 bbls.

Tidal Oil Co.'s No. 1 University, located in the SW Section 16, Block 18, University lands, Pecos County, cast a shadow over the new area opened up by Taylor-Link's No. 1 University, in the SW cor., Section 30, Block 16, 2½ miles to the southeast, for the former well has been shut down at 1,508 feet making sulphur water. This well was considerably higher on the lime, and it was believed by many that the pool would run from southeast to the northwest and that this test would prove that theory, but now the direction of the pool is open to anyone's guess, although Shell Petroleum Corp.'s No. 1 University would prohibit a guess running the pool east, for this test was abandoned at a total depth of 1,770 feet, after 1,300 feet of sulphur water was encountered from 1,689-98 feet, and at 1,735 feet started flowing water. The bailer is stuck in the hole at 1,770 feet. The Shell well is approximately 1¼ miles east of the Taylor-Link discovery which reached a production of 120 bbls. in 24 hours of 30.7 gravity oil, during the week. Six and five-eighths-inch casing was cemented at 1,555 feet. Total depth of the discovery is 1,628 feet, 15 feet in the pay. The Taylor-Link Oil Co. is now drilling a south offset in the NW cor., Section 31.

Buell & Hagan's No. 1 University, in the SE cor., Section 3, Block 18, 4 miles south of the Taylor-Link well, has been producing around 12 bbls. per day from pay encountered at 1,320 feet, and the company is preparing to put this test on pump. Total depth is 1,332 feet. The Sun Oil Co. has made a west offset location to this well.

Acreage has been changing hands in this area during the past week, major companies buying considerable quantities of outlying stuff, and no doubt the succeeding week will show other locations for tests in various parts of the new area.

Mitchell County Wildcat

The Simms Oil Co.'s No. 1 Ellwood, in the SE Section 29, Block 18, S.P.R.R. Survey, Mitchell County, is a rank wildcat which has been gathering a little attention to itself in the way down, for around 600 feet it encountered a quantity of gas, and the latest interest it has created has been in the way of a good showing of oil at 4,425 feet in sandy gray lime. The test is carrying 3,500 feet of salt water from 4,002-07 feet, and the well is now shut down, probably for casing off this water. The oil show came up through the water and the well was drilled to 4,427 feet before shutting down. The Republic Production Co. is sinking a test 4 miles west of this deep test. It is in the SW cor., Section 20, Block 17, S.P.R.R. Survey, and is drilling below 1,600 feet.

Yates Production Increased

After hearing evidence given by representatives of the different companies operating in the Yates Field, Pecos County, Texas, at a meeting of the advisory committee of this pool and the Railroad Commission of Texas, in which the representatives asked that the past plan of proration be continued, and that the amount of oil permitted to be produced daily from the field be increased to 130,000 bbls. daily, the Railroad Commission has published new rules and regulations, taking effect after 7 a. m. July 1, and allowing an increase in the production to the above mentioned amount, and a continuance of the proration as before. The field is divided into 100-acre tracts, and as the limits of the field are extended further additional 100-acre tracts may be added by the commission after consultation with the advisory committee of the operators in the field. Each of these 100-acre tracts shall be considered as a unit for proration.

Total potential of this pool on July 1, 1928, a year ago, was 2,575,047 bbls. with 206 producers in the field. Total potential July 1, 1929, is 4,590,686 bbls. for 24 hours' production, based on hourly proration gauges, but the Yates Pool advisory committee use the potential as based on 12 hours' production, a total of 2,295,343 bbls.

Two Wells Showing Water

When wells were opened during the week for proration tests, it was discovered that two wells, high on the structure and in the heart of the Yates Pool were making water. One of these wells is in the McMan-Continental's (Marland) No. 16 Yates in Vacancy Strip, Section 34½. It is located 210 feet south and 330 feet east of the SW cor., Section 104. It showed 1 per cent water. The other well was the California Co.'s No. 18 Yates, which is 850 feet from north and 955 feet from the west line of Section 34, Block 194, G.C.&S.F. Survey. This well showed 5 per cent according to the umpire's gauge. It was also reported that 58 out of the 313 producing wells showed water on the test. The previous test showed 37 wells making water out of 284 producers. Potential gauges showed a loss of 4.91 per cent since January 1 when the last previous test was made.

The Pecos Valley Oil Co. drilled its discovery well, No. 1 fee, located in Section 22, Block 10, H.&G.N. Survey, Pecos County, 13 feet deeper, from 1,628-41 feet with no increase in production. It has been pumping around 20 bbls. daily, and the company thought deepening would better its condition, but so far, it has not been helped.

It is reported that J. Z. Anderson, Buell & Hagan, and Thomas and Brann have formed a company called the Pecos Crude Oil Purchasing Co., which has purchased a one-half interest in the two producing wells, in the Pecos Valley Pool, Pecos County, and 160 acres on which they are located, in Section 22. This company is to drill one well on this acreage, and are to clean out and deepen the two producers. Thomas and Brann were given a 20-acre tract out of the northwest part of the west quarter of the section, for building a pipe line from the pool to a loading rack located on the Orient Railway at a point about 11 miles northeast of Fort Stockton. This is the only carrier or gathering line in the pool.

Yates Pool Extension

The Yates Pool was extended three-quarters of a mile to the southwest when the Plymouth Oil o.'s No. 2 Perry, located in the NE cor., Section 29, Block 178, T.C.R.R. Survey, was shut down at 1,817 feet flowing 10 bbls. hourly from pays at 1,772-76 and 1,796 feet; 200,000 feet of gas was encountered at 1,796 feet along with an increase in oil. The nearest production to this well is in the section to the north, which is owned by the California Co.

Phillips Petroleum Corp.'s No. 2 Ramsey, located in the NE cor., Section 17, Block 194, G.C.&S.F. Survey, is another southwest edge well to the Yates Pool, probably being more to the south than the west, which is producing in this direction. It was completed at a total depth of 1,672 feet, making 60 bbls. from pay at 1,645 feet. This well is 1¼ miles northeast of the Plymouth well.

Increase in Production

West Texas had an increase of 2,390 bbls. in production this week, Pecos County raising the quota over 4,800 bbls. while Winkler slumped off a little over 1,600 bbls., with some of the other counties falling off. Upton County fell off 4,226 bbls., while Crane County raised its quota almost 4,000 bbls. Pecos and Winkler Counties produced 252,342 bbls. while the remainder of the counties produced only 119,345 bbls., a total of 371,687 bbls. for the whole of West Texas.

ESTIMATED DAILY AVERAGE PRODUCTION WEST TEXAS
Week Ended June 29

County—	Wells	Prod.
Crane County	308	38,101
Crockett County	43	2,147
Ector County	3	0
Fisher County	7	855
Glasscock and Howard	348	43,120
Jones County	53	3,300
Loving County	12	629
Mitchell County	141	2,730
Pecos County	305	110,100
Reagan County	242	18,200
Runnels County	3	25
Scurry County	5	26
Upton County	238	8,519
Ward County	7	1,608
Winkler County	604	142,247
Total this week	2,349	371,687
Total last week	2,342	369,297
Difference	7	2,390

PIPE LINE RUNS
June 12 to June 19
Runs Through Trunk Lines

	Last period
Atlantic P. L. Co., Port Arthur, Tex.	38,500
Gulf P. L. Co. to coast via Ranger, Tex.	26,520
Humble P. L. Co. via Comyn, Tex.	50,264
Humble P. L. Co. via Ingleside, Tex.	34,825
Illinois P. L. Co. via Del Rio, Tex.	50,000
Magnolia P. L. Co. to De Leon, Tex.	28,075
Pasotex P. L. Co., El Paso, Tex.	10,895
Shell P. L. Co., Healdton, Okla.	41,655
Shell P. L. Co., Houston, Tex.	13,816
Total	294,550

Tank Car Shipments

Thomas & Brann, Grant City	122
Orient, McCamey, Tex.	140
The Texas Company, Crossett, Tex.	285
T. P. Coal & Oil Co., McCamey, Tex.	913
American Pet. Co., Pyote, Tex.	7,524
Skelly Oil Co., Pecos, Tex.	0
Southern Crude O. P. Co., Wickett, Tex.	13,514
Total	22,498

Runs to West Texas Refineries

Amarillo Prod. Co., Pyote, Tex.	935
Bluebonnet Ref. Co., Wickett, Tex.	2,151
Burford Ref. Co., Pecos, Tex.	4,947
Col-Tex Ref. Co., Colorado, Tex.	7,000
Cosden Ref. Co., Big Spring, Tex.	10,205
Great Western Ref. Co., Big Spring, Tex.	3,926
Humble Oil & Ref. Co., McCamey, Tex.	3,466
Midland Ref. Co., Midland, Tex.	2,257
Tonkawa Ref. Co., Pyote, Tex.	1,029
Valley Ref. Co., Pyote, Tex.	3,650
Big Spring Ref. Co., Big Spring.	2,504
Total	42,070

Summary

	Previous week	Last period
Pipe line runs through trunk lines	290,742	294,550
Tank car shipments	26,477	22,498
Runs to West Texas refineries	55,384	42,070
Total daily distribution	372,603	359,118
Total daily production	364,189	355,832
Daily average from storage	8,414	3,285

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended July 1

Company, farm and location—	Remarks—
ANDREWS COUNTY	
Mid-Continent Oil & Gas Co.'s No. 1 Fisher, 1,320 ft. N and 200 ft. E of SW cor. Sec. 5, Blk. A-36	Top salt 1,720 ft.; running 8¼-in. casing 3,355 ft.; drlg. 4,546 ft.; rainbow show oil 4,476 ft. and at 4,489 and 4,535 ft.
BORDEN COUNTY	
Moncrief et al's No. 1 Munger, C of SW Sec. 14, Blk. 31	Moving in material.
Texas & Wheeler's No. 1 Long, 1,320 ft. N and E of Sec. 27, Blk. 30, T.&P. Sur.	Rigging up.
BREWSTER COUNTY	
Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor. Sec. 45, Blk. G-15, G.C.&S.F.	Straightening crooked hole 1,925 ft.
Cowden & Bowser's No. 1-A Jackson & Harmon, Sec. 1, Blk. 331, T.C.R.R. Sur.	Set 8-in. 1,530 ft.; shut down 2,000 ft.
Forrest Oil Co.'s No. 1 Skinner, C SW SE Sec. 100, Blk. 2, G.C.&S.F. Sur.	Drlg. 180 ft.
J. M. Hickey's No. 1 Jackson & Harmon, NE cor. Sec. 182, Blk. 9, G.H.&S.A. Sur.	Shut down 1,302 ft.
Johnson & Weekley's No. 1 Jackson & Harmon, C Sec. 104, Blk. 10, G.H.&S.A. Sur.	Drlg. 1,503 ft.
Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 mi. S of Alpine	Shut down 1,740 ft.
COKE COUNTY	
Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H.&T.C. Sur., elev. 2,750 ft.	Drlg. 2,855 ft.
Mid-Kansas Oil Co.'s No. 1 W. E. Lackey, 330 ft. N and E of SW cor. Sec. 272, Blk. 1-A, H.&T.C.	Pay 3,755-56 ft.; 6⅝-in. casing set 3,451 ft.; drlg. 3,795 ft.
Ray E. McCamey et al's No. 1 McCutchen, 2,300 ft. S and 785 ft. W of NE cor. of T. J. Hines Sur. No. 4	Underreaming 2,700 ft.
CONCHO COUNTY	
Duffy et al's No. 1 Gilliam, 1,520 ft. N and 1,120 ft. W of SE cor. Sec. 21, Blk. 10, H.&T.C.R.R.	Spudded and shut down.
Jones & Leiner's No. 1 Jones, 420 ft. S and 15 ft. E of NW cor. John G. Reh Sur. No. 1,878	Top lime 1,770 ft.; top pay 1,775-80 ft.; 18 ft. oil in hole; to test; shut down 1,975 ft.

(Continued on Page 138)

WEST TEXAS COMPLETIONS

Week ending June 29

Glasscock County

World Oil Co.'s No. 1 McDowell-C, located 1,650 feet from north and 2,310 feet from east of Section 21, Block 34, topped the lime at 2,225 feet and had an initial production of 100 bbls. oil, 2 per cent water, at 2,349-98 feet.

Irion County

Kimbrough's No. 1 Nutt, located Subdivision 5, 150 feet south and east of SW NW, was dry and abandoned at 1,400 feet.

Fisher County

Texas and Phillips' No. 1 Hall, located 330 feet from south and east of Section 6, Block 20, topped the lime at 3,445 feet, drilled to a total depth of 3,600 feet and

(Continued on Page 144)

May Open New Pool in Jack County

Buttram Test North of Jacksboro and 2 Miles West of Avis
Pool Has Oil Showing. Foard County Well Deepened Again

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., July 1. — The promise of an extension, or new pool in Jack County, exceedingly good producers in Gray and Young Counties, and the deepening of Shell Petroleum Corp.'s discovery in Foard County, held most of the attention in the Panhandle and Wichita Falls districts.

The Shell Petroleum Corp.'s No. 1 Tarver, located in G.C.&S.F. Survey No. 3, Foard County, was again deepened this week, from 2,030 feet to 2,053½ feet. It swabbed and flowed 238 bbls. in 24 hours from gray lime encountered from 2,014-53½ feet, and was making from 4 to 5 gallons of salt water per hour. It is now shut down to be put on pump. Deepening was commenced last week because the well had fallen off considerably in production, and the company felt it would be bettered by going deeper.

May Open New Pool

Eight miles north of Jacksboro, or 2 miles west of the town of Avis and the small pool just north of Avis, the Buttram Petroleum Corp. has threatened to open a new pool in its No. 1 R. J. Boyd in the I. N. Wright Survey. This test encountered an oil show from 2,423-25 feet, and the hole filled 200 feet in 20 minutes. It also made two heads when 100 bbls. of water was poured in the hole to shut it in. When it was opened up later it failed to flow, and after bailing for some time it started showing water. An accompanying plat shows a small pool just north of Avis, and dry holes in the vicinity, one of them being abandoned at 2,270 feet, between the Avis Pool and the Buttram. Total depth of the Buttram well is 2,425 feet.

Jack County has been active for the past four months, considerable interest being displayed in the pool at Bryson, with much drilling going on in that area, but other parts of the county have also been given attention, and this new quasi-promise will no doubt give further encouragement to men and companies operating in the county, for Jack County produces from several pay formations, sands, and the county is dotted with small pools and spotted producers, and it is the hope of striking similar sands that gives impetus to the prospecting in the area.

Gray County Gasser

The Operators Oil Co. brought in a large gasser on the northeast edge of the Finley-Brown Pool in Gray County, in its No. 2 Faulkner which is located in the SW, Section 30, Block B-2, H.&G.N. Survey. Big gas was encountered at 2,765 feet and gauged 167,000,000 feet when first struck, but it later decreased to 50,000,000 feet.

The Gulf Production Co. brought in a nice well in Gray County when it completed its No. 1 Jackson at a total depth of 2,968 feet, after topping the pay at 2,635 feet, flowing 950 bbls. in 24 hours.

Fain-McGaha Oil Corp.'s No. 1 Huggins, which extended the Bulcher Pool 2½ miles southeast in Cooke County, was completed at a total depth of 1,190 feet. Top of the pay in this discovery was 1,181-90 feet and the initial production was 220 bbls. of oil and 15 bbls. of water.

The Phillips Petroleum Co. brought in a good well in its No. 2 Palmer, located in the E half, Section 31, Block B-2, H. &G.N. Survey, total depth of this test is 2,843 feet. Granite wash pay ran from 2,837-43 feet and the well flowed 50 bbls. per hour the first six hours making 33,000,000 feet of gas.

Young County Well Deepened

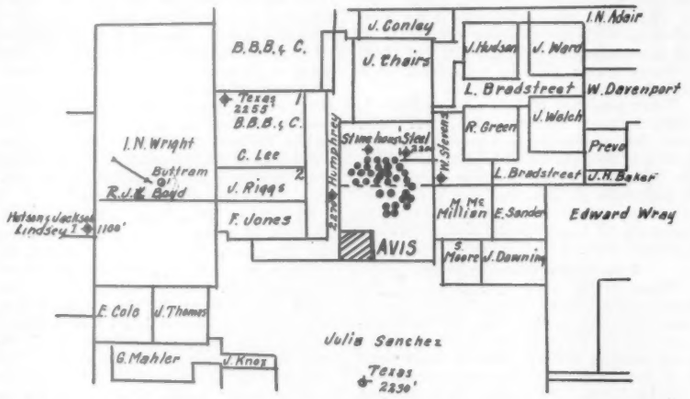
In Young County, E. C. Stovall deepened his No. 12 fee which was completed on May 18, 1929, at 3,920 feet. It was then producing 25 bbls. of oil and making 2,000,000 feet of gas from pays encountered from 3,833-43 feet, and 3,908-20 feet in gray lime, and after deepening to 4,240 feet it started flowing 250 bbls. per hour, 2 per cent water, from gray lime pay at 4,338 feet. The Prairie Pipe Line Co. is taking 185 bbls. per hour. This well is located in Lot 17 of the James Tobin Survey, Abstract 279. This might be an example for some of the other operators and companies in this area, and considerable deepening activity may be the result of the splendid increase in production in this well.

It is reported that E. J. Stump and others have extended the 1,800-foot sand of this area about 1½ miles north of production, in their No. 1 W. H. Chilson, which is located in Block 9, Denton County School Lands, Wichita County. Total depth of the well is 1,811 feet, and pay was struck at 1,803 feet. The hole started filling with oil and was shut down, swabbing a reported 200 bbls. from the sand. The nearest production to this new extension is on the Jackson land where the Shappel Oil Co. has production, about 3 miles north of the town of Holliday.

In Eastland County, the Eastland Oil Co. has a good well in its No. 2-A Keeney, in the northwest part of the Isaac Keeney tract in the R. Cochran Survey No. 269. Total depth of this new well is 1,974 feet, and top of the pay is 1,956 feet. It flowed 60 bbls. per hour and gauged 14,000,000 feet of gas. About three weeks ago this same company opened this new pool with its No. 1 Keeney.

Coleman County

The Taylor-Link Oil Co. has completed the second well in the pool that this company opened three weeks ago in its No. 1 Huddleston in Section 105, E.T.R.R. Survey, Coleman County. Its No. 2 McClure is a south offset to the discovery and came in making 95 bbls. daily from sand encountered at 658 feet. Total depth is 667 feet. The discovery well, which opened up this pool on June 13, came in making 200 bbls. the first 24 hours, from total depth of 683 feet. Pay was encountered at 681½ feet, believed to be the Babbington sand. The pool is 9 miles southwest of the town of Santa Anna. Gravity of the oil tested better than 42.5 at 74 degrees.



Plat showing Buttram Petroleum Corp.'s No 1 Boyd, which threatens to open a new pool in Jack County, 8 miles north of the town of Jacksboro.

Hill County Surprise

Harper and others' No. 1 Jones, last week's surprise discovery in Hill County, 1 mile west of the town of Mount Calm in the A. C. Graves Survey, pumped 175 bbls. the first 24 hours and 85 bbls. the second 24 hours, holding up around 80 bbls. daily since that time. Gravity of the oil is 31.3 corrected. Oil was encountered at 692 feet and the well was drilled to 700 feet before shutting down and testing, and later put on the pump. The discovery does not seem to have created much excitement, and the companies seem slow in recognizing this newly opened territory, although other tests in the area are rumored, and the following week may perhaps witness the staking of offsets. The test has been making a little salt water and basic sediment, but this seems to have cleared up, and is now making oil only.

Palo Pinto County

In Palo Pinto County, the Ashe Syndicate completed its second well on the Hart ranch, deepening it from a total depth of 3,442 feet where it was temporarily completed on June 19, to a new total depth of 3,944 feet after encountering another pay from 3,942-44 feet. The former initial production was 60 bbls. of oil and 6,000,000 feet of gas and in the last initial the gas rose to 40,000,000 feet but the oil dropped off to 40 bbls. This test is in Section 29, Block 3, T.&P. Survey. The syndicate's No. 1 Hart came in May 15 making 10,000,000 feet of gas from the Ranger sand encountered at 3,943 feet. The two wells are in the same section.

Estimated Daily Average Production
Week Ending June 29

NORTH TEXAS

Panhandle district—	Bbls.
Carson County	7,045
Hutchinson County	25,855
Gray County	53,110
Moore County	1,255
Potter County	25
Wheeler County	810
Total this week	88,700
Total last week	91,010
Decrease	2,310
Wichita Falls District—	
Archer County	18,636
Baylor County	82
Clay County	630
Cooke County	6,312
Foard County	126
Jack County	3,173
Haskell County	146
Montague County	6,573
Throckmorton County	725
Wilbarger County	26,391
Young County	7,044
Wichita County	26,331
Total this week	96,219
Total last week	95,826
Increase	393
Ranger district—	
Brown County	7,869
Callahan County	4,552
Coleman County	4,323
Comanche County	1,130
Palo Pinto County	347
Ranger	5,662
Shackelford County	11,951
Stephens County	6,259
Total this week	42,143
Total last week	41,482
Increase	661
Grand total this week	227,062
Grand total last week	228,318
Decrease	1,256

WICHITA COMPLETIONS

Archer County

Fain-McGaha Oil Corp.'s No. 4-A Taylor had an initial production of 55 bbls. at 1,471-90 feet and 1,490-92 feet. Gwynn & Boyd Co. and others' No. 3 Thompson made 125 bbls. at 1,587-92 feet. Hi-Land Oil Co.'s No. 1 Wilson was dry and abandoned at 1,610 feet. Holcombe & Jones' No. 1 Taylor was dry and abandoned at 1,825 feet. Perkins & Cullum's No. 2 fee was dry and abandoned at 1,640 feet. Petroleum Producers Co.'s No. 1 Taylor was dry and abandoned at 1,820 feet. Pois & Johnson's No. 3 Wilson was dry and abandoned at 1,550 feet. Atlantic Oil Producing Co. and Venmex's No. 2 Andrews had an oil show at 894-96½ feet and was dry and abandoned at 929 feet. Continental Oil Co.'s No. 5-B Richardson had an initial production of 66 bbls. at 1,144-50 feet and 1,152-54 feet and was drilled to a total depth of 1,154 feet.

(Continued on Page 173)

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending July 1

CARSON COUNTY

Company, well, farm, name, section and block—	Remarks—
Delmar Oil Co.'s No. 4 Nail, 330 ft. from N line, 330 ft. from W line of W½ SE, Sec. 198, I.&G.N., Blk. 3	Drlg. 2,646 ft.
Empire G. & F. Co.'s No. 16 Burnett, C NW cor. Sec. 104, Blk. 5, I.&G.N.R.R. Sur.	Drlg. 2,684 ft; 22,000,000 ft. gas 2,422-2,684 ft.
Empire G. & F. Co.'s No. 5 M. P. Co.'s "A," 330 ft. S and E of NW cor. SE SW, Sec. 91, Blk. 4, I.&G.N. Sur.	First gas 2,650 ft; 7,000,000 ft; T. D. 3,125 ft; 1,800 ft. oil in hole; T.P. 3,120 ft.
Empire G. & F. Co.'s No. 1 Deahl, 660 ft. from N line, 660 ft. from W line, Sec. 21, Blk. Y-2	Drlg. 1,720 ft.
Gulf Prod. Co.'s No. 1 Garner-B, 330 ft. N and W SE cor. SW, Sec. 106, Blk. 4, I.&G.N.R.R. Sur.	Drlg. 120 ft.
Gulf Prod. Co.'s No. 7 Noel, 330 ft. S and W NE cor. SW, Sec. 198, Blk. 3, I.&G.N. Sur.	Drlg. 1,125 ft.
Herragan Oil Co.'s No. 1 L. C. McConnell, 330 ft. N and W line W½ SW, Sec. 187, Blk. 3, I.&G.N. Sur.	Drlg. 1,145 ft.
Magnolia Pet. Co.'s No. 7 fee, 990 ft. from W line, 990 ft. from S line SE, Section 91, Blk. 4, I.&G.N. Sur.	Rig.
McConnell O. & G. Co.'s No. 1 McConnell, 330 ft. from N line, 330 ft. from E line W½ NE, Sec. 65, Blk. 4, I.&G.N.R.R. Sur.	Set 6-in. csg. 2,850 ft.
Midwest Explin. Co.'s No. 1 Cooper, 330 ft. each way from SE cor. W½ NW, Sec. 5, Blk. 9, H.&G.N. Sur.	Drlg. 2,860 ft.
Midwest Explin. Co.'s No. 2 Cooper, 990 ft. from S line and 330 ft. from W line W½ NW, Sec. 5, Blk. 9, I.&G.N. Sur.	Drlg. 1,470 ft.

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Lea County Well Better Than Expected

Vacuum Oil Co. Test 18 Miles East of Caprock Pool Makes 231 Bbls. in 17 Hours. Cane Creek Has Another Disappointment

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., June 29.—The Vacuum Oil Co.'s No. 1 State, in the center of Lea County, New Mexico, 18 miles east of the Caprock Pool, was tubed and put on a production test making 196 bbls. in nine hours, and two days later putting 231 bbls. in the tank in 17 hours. Three new locations in Lea County were announced this week, one each by the Magnolia Petroleum Co., C. E. Reynolds and others, and the Maljamar Oil & Gas Co. The Empire Gas & Fuel Co. probably will abandon its No. 2-B State, in Section 8-21-35, which has a hole full of sulphur water at 4,145 feet, and the Texas Production Co.'s No. 1 Lynch, in Section 34-20-34, made 996 bbls. in 24 hours. In Eddy County, the Grayburg Oil Co.'s No. 2 Burch, in the area northeast of the Artesia Pool, is showing for a producer, while the Ohio Oil Co.'s No. 1 Sellery, in the same district, appears to define the limits of the new pool on the northwest.

Utah had a disappointment in the Utah Southern Oil Co.'s test on the Cane Creek Dome drilled on the flank of the structure on the theory that it was a salt dome, but which encountered the same thick beds of salt found in the discovery well on top, and is being abandoned.

Colorado's most interesting wildcat, the Five Square Oil & Gas Co.'s No. 1-A State, on the Berthoud structure in Larimer County, continues as promising as two weeks ago. The bit has been recovered and preparations are being made to drill into the sand. The hole has 1,000 feet of oil. The Continental Oil Co.'s No. 3 Mitchell, on the Wellington Dome, which came in two months ago as a water well with a show of oil, is making 125 bbls. of oil and 200 bbls. of water after persistent pumping.

Wyoming had five completions, one being a Sundance sand well on a Wyoming Associated lease in Salt Creek with an initial production of 3,247 bbls. Another was the Prairie Oil & Gas Co.'s No. 74-A, in the Little Lost Soldier Field, which made 1,100 bbls. initial from the Sundance at 1,926 feet.

NEW MEXICO

The Vacuum Oil Co.'s No. 1 State, center of section line between Sections 13 and 14-17-34, about the center of Lea County, 18 miles east of the Caprock Pool, did much better than was expected on a production test. The total depth is 4,710 feet. The 2½-inch tubing was run to 4,496 feet and the well made about 196 bbls. in nine hours. Two days later, after the flush production was off, it made 231 bbls. in 17 hours. The location is 2½ miles southeast of Inglefield & Bridges' No. 1 State, abandoned last year after having good shows, but not in commercial quantities. The Vacuum company's well is considerably higher. Three new locations in Lea County were made this week, one being the Magnolia Petroleum Co.'s No. 1 Lindley, SE cor. NE, Section 26-25-36, in the Jal district, another being C. E. Reynolds and others' No. 1 Merchant, SE cor. NE, Section 15-22-34, and the third, the Maljamar Oil & Gas Co.'s No. 2 Baish, NE cor. SW, Section 21-17-32, in the Caprock district. The Maljamar company had planned to drill on the Simon permit in the NE NE, Section 29-17-32, and was waiting for an extension of permit. The extension has been granted, but on condition that the well should not be drilled at once and that the Baish permit should be drilled instead. This is considered further proof that the Department of the Interior has gone a considerable distance in modifying the policy put into effect on March 12, 1929, which threatened to force operators to drill at once on all permits in good standing, and is extending permits on condition that drilling is not started until towards the end of the extension.

The Texas Production Co.'s No. 1 Beulah Lynch, NW cor. SE, Section 34-20-34, completed last April and shut in for storage, is now on production. It gauged 515 bbls. from 8 o'clock a.m. until 8 p.m., on June 15, and is holding up better than expected, putting 996 bbls. into the tank in 24 hours on June 17. The Empire Gas & Fuel Co.'s No. 2-B State, NW SW SE, Section 8-21-35, probably will be abandoned as a result of running into sulphur water. It is bottomed at 4,145 feet with the hole full of water, the first water showing at 3,900 feet. The same company's No. 1 Martin, SW cor. NE, Section 28-20-32, is drilling at 3,215 feet in salt, and its No. 1 Closson, NE NW SE Section 6-22-36, is drilling in salt at 3,020 feet.

Jal District

The Midwest Refining Co.'s No. 22 Gregory, NW SE SW Section 31-25-37, in the Jal district, is drilling at 2,940 feet in sandy lime after having 1,000,000 feet of gas at 2,894 feet, which increased to a total of 3,000,000 feet at 2,902 feet. The same company's No. 31 Capps, SW cor. Section 3-19-38, Hobbs district, is drilling at 2,955 feet in brown shale. Harry Walker and others' No. 1 Terry, NW SE SE Section 10-19-38, in the same area, is shut down at 65 feet after spudding. Joe Cook and others' No. 1 State, SW NW NE Section 12-21-33, is drilling in red shale at 540 feet, and the Rector Oil Co.'s No. 1 King, NE NE Section 26-25-32, is drilling at 1,082 feet in salt. The salt was topped at 1,058 feet. The Texas & Pacific Coal & Oil Co.'s No. 1 State, SE cor. SW Section 22-23-36, plugged back from 3,995 feet to 3,668 feet, has been completed as a gas well and gauged 15,000,000 feet with a pressure of 1,350 pounds. The top of the sandy lime was found at 3,080 feet. The base of the salt was at 2,923 feet. The Humble Oil & Refining Co.'s No. 1 Bowers, C NE SE Section 30-15-38, is drilling at 99 feet in hard rock, and its No. 1 Lindley, C NE NE Section 23-25-36, is drilling out plug after cementing the 12½-inch at 476 feet. The Gypsy Oil Co.'s No. 1 Humphreys, NW cor. SW Secvtion 25-25-36, in the Jal district, is drilling at 2,640 feet in salt, and its No. 1 Mattern, SW cor. SE Section 24-21-36, in the Eunice district, has recovered the drilling stem and is fishing for bit. The quantity of gas has shown a small increase. Total depth is 3,550 feet. The Texas Production Co.'s No. 1 Humphreys, NE cor. SW Section 18-20-32, is drilling at 2,840 feet in lime and red sand, and its No. 1 Shepherd, SE cor. NE Section 6-26-37, is redrilling at 3,026 feet, the bottom of the old hole being at 3,223 feet. Cranfill & Reynolds' No. 1 Wilson, NE NW NE Section 23-25-36, is listed as a completion at a total depth of 3,400 feet after plugging back and is making 60 bbls. of oil a day with 500,000 feet of gas. The top of the salt was at 1,135 feet, base at 2,923 feet, top of brown lime at 3,017 feet, and top of sandy lime at 3,160 feet. The elevation is 3,073 feet. Same company's No. 1 Meyers, NE cor. SE Section 22-24-36, is shut down at 2,968 feet in lime. The base of the salt was at 2,910 feet and top of the brown lime at 2,960 feet. Same company's No. 1-B State, NE cor. Section 2-21-33, is bottomed at 840 feet in red rock and is underreaming the 12½-inch. Bull & Hagan's No. 1 State, C NE Section 33-11-35, is shut down at 1,700 feet in red sand. The Shell Petroleum Corp.'s No. 1 Terry, SE SW NE Section 22-19-38, in the Hobbs area, is drilling at 1,134 feet in red shale. Henderson, Dexter & Blair's No. 1 McDonald & Jewett, SE cor. Section 18-20-34, is shut down waiting for storage.

Eddy County

In Eddy County, the area to the northeast of the Artesia Pool in the vicinity of Flynn, Welch & Yates' No. 1 Jackson, continues the principal point of interest. The Grayburg Oil Co.'s No. 2 Burch, C NW SW Section 19-17-30, located 5½ miles west and 1½ miles south of No. 1 Jackson, is bottomed in lime at 3,050 feet and running the 6⅝-inch casing. It had 600 feet of oil in the hole at 2,990-3,004 feet and this increased at 3,035-40 feet, being estimated good for 40 bbls. This is about double the quantity found in the corresponding break in the lime in the Jackson well. On the contrary, the Ohio Oil Co.'s No. 1 Sellery, SE cor. NE Section 22-16-30, appears to have found the limits of the pool on the northwest. It had water in red sand at 2,280 feet and is being abandoned at a total depth of 2,308 feet. R. D. Compton's No. 1 Vandergriff, NW cor. NE Section 33-19-30, is shut down at 340 feet in red shale, and the Prairie Oil & Gas Co.'s No. 2 Keel, SW cor. Section 7-17-31, is drilling at 1,360 feet. Flynn, Welch & Yates' No. 2 Gissler, SE cor. SW Section 12-17-30, half a mile northwest of No. 1 Jackson, is drilling at 2,340 feet in gray lime, and the Midwest Refining Co.'s No. 31 Lane, SW cor. Section 28-19-30, is drilling at 1,733 feet with a show of oil and gas at 1,722 feet. The Pueblo Oil Co.'s No. 4 Russell, NW cor. Section 18-17-31, is drilling at 1,275 feet in salt, the salt being topped at 555 feet. The same company's No. 1 Lee, NE cor. Section 34-17-29, is drilling at 1,775 feet in anhydrite. The Pecos Valley Gas Co.'s No. 5 Vandergriff, SW SW Section 5-17-28, Artesia district, is shut down at 720 feet in gypsum.

De Baca County

In De Baca County the Matador Oil Co.'s No. 1 Wood, SW SW Section 6-4n-20, Salada Creek, is shut down for casing at 2,133 feet with a hole full of water from horizon at 2,129 feet, and the Transcontinental Oil Co.'s No. 1 McWhorter, SW NW Section 6-3s-22, is drilling at 4,400 feet in gray lime.

In San Juan County, in the northwestern part of the State, the Dorothy Oil Co.'s No. 2 Goede, NW SE Section 29-30-9, in the Blanco district, is resuming at 540 feet. Contract has been let to Ed Barber. The Kutz Canon Oil & Gas Co.'s No. 1 Day, SW cor. Section 20-28-10, is bottomed at 820 feet in blue shale and will lower casing for a water shutoff. The Angel Peak Oil Co.'s No. 1 Garland, NE NE Section 11-28-11, has about completed new standard rig after a fire and is ready to resume at 3,065 feet.

In Chaves County, H. T. Neal and others' No. 1 Russell, NW NW Section

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DEEPEST GEOLOGICAL HORIZON YET REACHED IN TURNER VALLEY

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, June 29.—In the Turner Valley Field, 11 tests are drilling at various stages in the deep lime. Of these, several have got some production in the upper lime horizon and are being drilled deeper. The most interesting development has been in McLeod Oil Co.'s No. 4, LSD 16, Section 1-20-3w5. This test had been carried 5,030 feet, or 1,308 feet in the deep lime, when a marked increase was shown in the wet gas production and pressure. Crude naphtha recovery on the separator increased from 99 to 120 bbls. Deepening the test has been temporarily discontinued, but it may be carried farther into the lime. This is the deepest geological horizon yet reached in the Turner Valley drilling. McLeod's No. 3, same LSD, in the lime at 4,973 feet, is being given a production test with 500 pounds back pressure; its previous naphtha recovery was around 60 bbls. a day. McLeod's No. 1, same LSD, is making around 50 bbls. from the upper lime. McLeod's No. 2, same LSD, at 4,420 feet is fishing for a lost bit.

Okalta Oils' No. 1, LSD 1, Section 1-20-3w5, is making 420 bbls. a day from the deep lime. Cellar has been concreted and 500 pounds back pressure is being applied to increase crude naphtha recovery. Calmont Oils' No. 1, LSD 2, Section 1-20-3w5, is drilling out cement plug recently put in to help sidetrack lost tools.

Spooner Oils' No. 2, Section 24-20-3w5, is drilling 330 feet in the lime at 5,405 feet, and maintaining a fair crude naphtha production. Illinois-Alberta Oils' No. 2, LSD 14, Section 12-20-3w5, is drilling past lost bit at 3,640 feet. The drill is a short distance in the lime. When this test is completed, Illinois-Alberta's No. 1, which has been making around 90 bbls. from the lime, will probably be deepened with the diamond drill, and No. 3, same LSD, started as a rotary test. Derrick is being started for No. 3. New McDougall-Segur Oil Co.'s No. 2, same LSD, is making new hole in the lime below 5,373 feet after sidetracking lost tools. The hole is in the lime 315 feet and making 8,000,000 feet of wet gas. New McDougall-Segur's No. 2, same LSD, which had a small production, around 10 bbls. a day, in the Blairmore-Dakota at 2,495 feet, is cleaning out 12½-inch casing preparatory to drilling to the deep lime horizon. A shot in the Dakota horizon failed to increase the shallow production but loosened the jammed casing.

Imperial Tests

In the Imperial Oil group of tests, several are drilling in the lime. Home Oil Co.'s No. 2, LSD 14, Section 20-19-2w5, is reported making better than 400 bbls. a day with no back pressure and potential production of 700 bbls. when full recovery is secured. It is reported that Royalite's No. 10, NE Section 12-20-3w5, which has been taking a light crude production at 2,332 feet, will be deepened to the lime.

Lowery Petroleum's No. 1, NW Section 17-19-2w5, is rigging up. Baltic Oils' No. 1, west of Home's No. 4, has equipment on the ground and derrick up.

(Continued on Page 114)

Pipe Line Construction News

GAS LINE TO SAN DIEGO UNDER CONSIDERATION

SAN DIEGO, Calif., June 29.—Construction of a high-pressure pipe line to supply natural gas from the Los Angeles area to San Diego homes is contemplated by the Southern California Gas Co., which has entered into negotiations with the San Diego Consolidated Gas & Electric Co. for distribution of the gas.

The Southern California Gas Co. has applied to the Board of Supervisors for a franchise covering the transportation and sale of natural gas in the county, and has applied to the Railroad Commission for a certificate of public convenience and necessity to operate such a franchise, it was announced by A. B. Macbeth, president of the company. It was reported that the company already has obtained pipe line franchises up to the San Diego county line.

Under the plan gas would be supplied to various communities along its line. The proposed pipe line would start at the Huntington Beach oil field, about 85 miles from San Diego, and connect with the local gas company's lines near La Jolla.

W. F. Raber, head of the local gas company, said his concern is negotiating with the Southern California company in regard to the natural gas line. If satisfactory arrangements can be made the line doubtless will be constructed, he said. Such a pipe line would cost approximately $1,500,000, Mr. Raber estimated.

Details to be worked out, he said, included studies of the cost of transmitting the natural gas to this area. He said if the gas could be transmitted at a price comparative with that of gas generated from oil shipped here, San Diego homes will be burning natural gas soon.

COLON COMPANY PLANS TARRA-MARACAIBO LINE

The annual report of Colon Oil Corp. (Royal Dutch-Shell) for 1928 traces development work by its operating subsidiary, Colon Development Corp., on Vigas concession in Maracaibo district, Venezuela. Route of the projected pipe line, which will extend from Tarra Field, in the southern part of the concession, to Lake Maracaibo, has been cleared and graded, and laying of pipe has begun. The line, which will be about 90 miles long and have capacity of 20,000 bbls. of crude oil daily, will start from Casigua, the present field terminal, and proceed northward through Manueles Field, turning east to Bobures on Escalante River. The river will be followed to a point near its mouth, Boca Escalante, where pipe line terminals and loading station will be located. At loading station there will be five 20,000-bbl. tanks, from which oil will be loaded through submarine lines, terminating at a platform off shore, against which tankers can berth.

It is estimated the line will cost $2,600,000 and will be ready for delivery for oil early in 1930.

NEW GREASE PLANT PLANNED

The International Lubricant Corp. (formerly the Battenfield Grease & Oil Co., Inc.), New Orleans, La., has announced its intention to build a modern grease plant in that city. No details have been given out, but the company officials say only the most improved equipment is to be installed.

NEW BULK STORAGE

HOUSTON, Tex., June 29.—Plans have been completed by the Gulf Refining Co. for construction of a new bulk storage plant at Lafayette, La., and will include new loading racks on the Southern Pacific as well as a small office building.

NEW PIPE LINE TO EDMONTON

CHATHAM, Ontario, June 29.—Contracts for the laying of the first section of a duplicate pipe line from the Viking gas field to Edmonton, Alberta, have been let by Northwestern Utilities, Ltd., to W. A. Forman, Ltd., and Louis Jackson. The distance to be piped this year is 20⅔ miles, and work will be started from the field end about July 15. The contract calls for spending of $317,000 in material and approximately $50,000 in labor. In all, 109,120 feet of pipe will be put in, and 70 men kept on the job, a 24-hour shift being maintained. Delivery of pipe started June 22, and daily shipments are being made at the rate of 1½ miles a day. The pipe is 12¾-inch. On certain sections where the soil has corrosive qualities, approximately 7 miles, a special treatment will be provided.

COMPLETE 80 MILES OF BRUNI-WEBB LINE

SAN ANTONIO, Tex., July 1.—More than 1,200 men, working in three crews, have completed 80 miles of the new pipe line being built by Magnolia Gas Co. from Bruni gas fields in Webb County to San Antonio. Work started about June 1. Total length of the line when completed will be 230 miles.

Fifty-eight miles of the new line will be 20-inch; twenty miles will be 18-inch and the rest will be 14-inch. It is electrically welded throughout and asbestos wrapped. It will deliver a maximum of 125,000,000 feet of gas daily.

North junction of the line will be located at the station of Fratt, about 10 miles northeast of San Antonio. The main line at this point will be 20-inch, and a 14-inch tap will be made there to serve the plant of the San Antonio Portland Cement Co. near that point.

From the cement plant, the line will be extended some 30 miles north to New Braunfels, where it will serve the power plant of the San Antonio Public Service Co. At present this plant is using Texas lignite under a special process the company developed.

The main line will pass about 10 miles to the east of San Antonio and be tapped with a 14-inch line that will serve the local Conception road power plant of the Public Service Co. The balance of the gas in the line will be held in reserve for domestic consumption at San Antonio, according to contract between Magnolia Gas Co. and San Antonio Public Service Co., local distributors.

Site for compressor stations have been acquired along the route of line, but compressors will not be installed until needed. At present the well pressure is sufficient. Gas will travel through the new main at a maximum of 80 miles per hour, compared to former maximum of 15 miles per hour, according to Fred M. Lege, president.

Completion announced now is three units: From Fratt, 20 miles south to Elmendorff; from Bruni fields, 20 miles north and from Nueces River, 40 miles north of town of Green.

NEW PUMPING PLANT

LOS ANGELES, Calif., June 29.—The Western Oil & Refining Co.'s new $12,000 central pumping plant has just been completed at Signal Hill. It will have a capacity of 15,000 bbls. daily. It will pump oil direct from each well. Under the new conditions, two main feeders to the plant will pick up the oil from the various fields and send it through a 12-mile, 6-inch pipe to the refinery.

PIPE MILL OPERATIONS ESTIMATED 60 PER CENT

By B. E. V. Luty

PITTSBURGH, Pa., July 1.—Pipe mills making the larger sizes are moderately well booked for two or three months to come while the Milwaukee producer of electrically welded pipe is well filled with business and has had to place some plate orders in the East as the Chicago district supplies were inadequate for the present heavy operations.

Pipe mill operations may still be estimated at about 55 per cent and seamless tube mill operations at around 70 per cent making about 60 per cent for tubular goods in general.

The steel industry as a whole has practically maintained its rate of production to date, a record high rate in general as the official report of steel ingot production in May showed the highest daily rate on record. Possibly there has been a decrease of 2 per cent or so from the May rate, but that is not certain and if there has been a decrease it may be due entirely to hot weather and the failure of open-hearth units from continued hard driving for about five months.

Maintenance of steel production has been a phenomenal performance, since invariably there is a marked seasonal decrease by this date, beginning on an average in the last week of March. However, there is practically no doubt that there will be a decrease this month, and not the ordinary summer dip, for it is now too late for an ordinary summer dip, and further decreases, probably slight, for some time to come. According to all present indications, this will be a case of one thing bringing on another. Steel has been scarce for three months, not in the sense of there being an actual shortage or deficiency, but along the line of nearly all consumers importuning mills for deliveries, to make sure they would get enough. With any slackening in requirements this pressure would soon come off and consumers would then be fearful lest they should receive too much steel, the mills having actual shipping orders on books, in the majority of lines, to run them for some time if let alone, but there is always a chance in such cases of some consumers instructing that some deliveries be postponed.

ALBERTA DRILLING CAMP

CHATHAM, Ontario, June 29.—Union Drilling Co. of Calgary is constructing a large central camp for use of its men employed in the Turner Valley Field. The camp is being built on the Mercury lease in the south end of the field, and will accommodate 100 men with separate rooms, running water, electric light and shower baths. Dining room, kitchen and some 10 bunkhouses will be provided. William Maughan is head of the company.

PROPOSED LINE TO WASCO

LOS ANGELES, Calif., June 29.—Plans for obtaining natural gas are under consideration at Wasco. The town is unincorporated but a public utility district has been formed and an engineering report on the cost of a pipe line from the Southern California Gas Co.'s station at Rio Bravo to the line of the district and of a distribution system within the district has been received. The estimate for these two projects is $133,320, more than double the bonding capacity of the district wherefore the engineers recommend that arrangements be made with the gas company to build the pipe line and that the district build only the distribution system.

MOUNT PLEASANT PIPE LINES

MOUNT PLEASANT, Mich., June 29. The Pure Oil Co. is laying approximately 14 miles of 3-inch pipe line, supplementing its 2-inch line, from the loading racks at Mount Pleasant eastward along the 2-inch lines, to its Foutch booster station, about 6 miles east of Mount Pleasant, and on east to a prospective tank farm where a 55,000-bbl. tank will be erected. The added pipe line will more than double the present carrying capacity of the field.

The East Ohio Co. has acquired a right of way for a pipe line to be laid from the Weidman well in Section 12, Chippewa Township, to a loading platform at Mount Pleasant. At present the oil from this well is pumped through Pure Oil lines.

PLAN NEW CONSTRUCTION IN MUSKEGON, MICH.

MUSKEGON, Mich., June 29.—Construction of a new pipe line in the Muskegon, Mich., Field which will run about 4,000 bbls. a day has been started. The line is being laid by Carl J. Westlund, former gasoline and petroleum products distributor in Muskegon, and R. A. Whitehead, of Chicago. Contracts for priority on production of wells on about 200 acres in the heaviest Dundee producing area of the field in Muskegon and Laketon Townships have been signed at 20 cents less than the Mid-Continent scale for 36 gravity oil, or the same proposition as that offered by the Shell Petroleum Corp. At present this means payment of $1.25 per barrel for Dundee crude. In addition the company has offered to purchase definite job lots of from 5,000 to 25,000 bbls. or more up to a total of 200,000 bbls. at 90 cents a barrel. This is to fill a definite market of 200,000 bbls. of cheap oil and to allow producers who wish to sell a large amount of their flush production as rapidly as possible to obtain relief through the new line.

A 4-inch main line about 1½ miles long is being laid from Section 12, Laketon Township, across Sections 6 and 7 of Muskegon Township to the Pere Marquette Railroad tracks, a mile east of Giles corner where a 50-car loading rack will be erected immediately. The loading rack will be on the Charles I. Giles lease alongside the site for the Michigan Central Refining Co. plant now in the process of construction.

A pumping station will be erected on the Jacob Koning lease of the Henley Oil Co. opposite the junction of Daniels' Avenue and U. S. 31 on the Bear Creek flats. About a mile of 2 and 3-inch lines from the wells to the main trunk line will complete the gathering system which will cost about $25,000. It will have a daily capacity of 11,000 to 12,000 bbls. but will operate on a basis of 4,000 bbls. a day. Two 5,000-bbl. storage tanks will be erected on the Giles property near the loading rack for loading purposes.

After producers have been given an opportunity to run what flush production they wish at 90 cents a barrel, the company will prorate its daily runs on the accepted basis of 50 per cent for acreage and 50 per cent for open flow capacity or any other basis that may later be adopted by the producers in conjunction with the major pipe line companies and the new oil and gas conservation supervisor of the state department of conservation.

No announcement can be made at this time with regard to the market for Dundee crude to be run by the new pipe line. The oil, however, is being purchased through the company for refining at a number of independent plants throughout the country.

SHEEHAN

PIPE LINE

12" Electric Welded
Texas Empire Pipe Line Co.
Cushing to
Arkansas
River

CONSTRUCTION CO.

TULSA, OKLA.

OKLAHOMA FIELDS

(Continued from Page 51)

at 3,642 feet and cored a show of oil in the lime at 3,680-88 feet. The Prairie Oil and Gas Co.'s No. 4 Laster, SW SE NE, Section 19-6-4, Pottawatomie County, cored a showing of oil in the Cromwell sand at 3,220-30 feet. Same company's No. 3 Laster, NW SE NE, Section 19-6-4, made 960 bbls. on air on the gauge of June 29. Independent Oil & Gas Co.'s No. 1 Gardner, NE SW SE, Section 19-6-4, the most southerly well in the field, swabbed 254 bbls. of oil in 18 hours with trace of water.

Logan County has 6,800-bbl. Well

Logan County's biggest well is the Shell Petroleum Corp.'s No. 8 McCulley, SE SW SE, Section 30-19-4w. The well had the Wilcox sand at 5,975-6,037 feet, and its peak of production was 6,833 bbls. while last Saturday's gauge was 6,110 bbls. Same company's No. 6 made 620 bbls. while still fishing at 5,936 feet. Same company's No. 7, at a total depth of 6,027 feet, produced 135 bbls. while the hole was full of water. No. 9 was drilling at 3,800 feet and No. 10 was also drilling at 1,500 feet.

J. S. Cosden, Inc. is attempting to drill by tools in the hole in its No. 1 Gardner, NE NW, Section 31-19-4w, Logan County, at a total depth of 5,925 feet, while the well flowed 990 bbls. of oil.

The Superior Oil Co.'s No. 1 Jackson, SW cor., Section 36-8-4, Pottawatomie County, is running 6-inch casing on top of the Viola lime at 4,130 feet. Independent Oil & Gas Co.'s No. 1 Barrow, SW NW NW, Section 1-7-4, the discovery Wilcox sand well in that district, swabbed 580 bbls. in 16 hours from a total depth of 4,329 feet. Keister & Manning's No. 1 Kelly, SE NE NE, Section 2-7-4, Pottawatomie County, the discovery well in the new extension to the St. Louis Pool, flowed 195 bbls. from the Hunton lime at the total depth of 3,875 feet. Same company's No. 2 Kelly, NE cor. Section 2-7-4, flowed 2,255 bbls.

Magnolia Petroleum Co. and Pierce Petroleum Corp.'s No. 1 Hubanks, SW SE NW, Section 17-7-4, Pottawatomie County, flowed 1,510 bbls. on air, cutting 3 per cent. No. 2 Hubanks, SE NW, Section 17-7-4, was drilling at 4,980 feet, with 2,000 feet of oil in the hole.

In the Beebe Area

In the Beebe area, Pontotoc County, the Empire Oil & Refining Co.'s No. 1 Norris, SW SE NW, Section 19-5-5, had the Viola lime at 2,342-72 feet where it produced 626 bbls. on Thursday and 530 bbls. on Friday on the swab and was drilling deeper. American Refining Co.'s No. 2 Robertson, SW NE SW, Section 19-5-5, had the top of the Sylvan shale at 2,285 feet, and is landing 8-inch casing at 2,389 feet. Independent Oil & Gas Co.'s No. 1 Davis, NE NW SW, Section 19-5-5, was drilling ahead at 2,431 feet after landing 6-inch casing at 2,405 feet. Transcontinental Oil Co.'s No. 1 Perry, SE SW NW, Section 19-5-5, is running 8-inch casing at 2,148 feet.

Earlsboro Prolific Extension

The Earlsboro Pool shows an increase of over 11,000 bbls. a day from the previous week, due mostly to the finding of Wilcox sand production in Section 18-9-6. The discovery well in this section was the Magnolia Petroleum Co.'s No. 1 D. A. Anderson, NE NW SE, Section 18-9-6, Seminole County, the Wilcox sand was at 4,358-70 feet, where it started to make oil at the rate of 2,300 bbls. a day. Since that time the Magnolia Petroleum Co. has completed five more wells in the section and the Prairie Oil & Gas Co. has completed one, making a total of seven producing wells in the section and 17 drilling and locations. The production of the seven wells on June 28 was 21,000 bbls. The district is commanding more attention than any other in the Greater Seminole area.

While four new wells were added to the St. Louis Pool the past week it showed a decline of more than 9,000 bbls. from the total of the previous week.

The following recapitulation reveals the conditions in the St. Louis Pool as of June 1:

	Bbls.
Production from Wilcox sand	58,246
Production from Simpson	25,527
Production from Hunton	5,486
Production from Stray sand	15
Total	89,274
No. Wilcox wells	66
No. Simpson wells	212
No. Hunton wells	79
No. Stray sand wells	1
Total	358
Wilcox sand wells making water	59
Simpson wells making water	103
Hunton wells making water	12
Stray sand wells making water	1
Total	174
Wells on pressure	61
Wells flowing	41
Wells pumping	227
Wells swabbing	10
Wells off production	19
Total	358

New Well in Sasakwa

Another new well was added to the district north of Sasakwa in the eastern part of Seminole County. The Shell Petroleum Corp.'s No. 1 Holatka, SW NE SE, Section 7-6-8, flowed 1,635 bbls. on the gauge of June 29 from the Wilcox sand at 4,193-96 feet. It is the second Wilcox sand well completed in that section. The Sinclair Oil & Gas Co.'s No. 2 Davis, SW NW SE, Section 7-6-8, flowed 3,725 bbls. on July 1 from Wilcox sand at 4,476-79 feet. The only other producing well in the district is the Sinclair Oil & Gas Co.'s No. 1 Davis, NW SW SE, Section 7-6-8, which is producing from the Viola lime and made 215 bbls. on the gauge of June 29. Same company's No. 3 Davis, SW SE, Section 7-6-8, was drilling at 4,110 feet. It had a small showing of oil in the Viola lime at 4,026 feet.

The Texas Company's No. 1 Fleet, SE cor., Section 15-5-7, Allen district, Seminole County, a semiwildcat test, found water in the Wilcox sand at 4,615 feet. It will probably be abandoned. The Sun-Ray Oil Co.'s No. 1 A. Joanna, SW NW SW, Section 24-5-7, Seminole County, found a hole full of water in the Wilcox sand at 4,340-80 feet and was drilling deeper.

The Prairie Pipe Line Co. is laying an 8-inch line from its station in Section 18-7-5, to the new well of the Indian Territory Illuminating Oil Co. in Section 35-8-4 in the north extension to the St. Louis Pool.

The Papoose Oil Co.'s No. 1 Mark, SE NW, Section 32-10-6, in the Searight Pool, Seminole County, had Cromwell sand at 4,010-50 feet and set 8-inch casing at 4,260 feet. After bailing it started flowing 20 bbls. an hour by heads and flowed 532 bbls. in 24 hours. Oil may be coming from Sycamore lime or the base of the Mayes. The owners have been unable to determine the source of the oil from the samples.

Alco Royalty Corp. and Meade Brothers' No. 1 Hall, SW SE SW, Section 25-17-3, in the northern part of Lincoln County, 6 miles from any production, found the Bartlesville sand at 3,887-3,909 feet with 10,000,000 feet of gas, and spraying oil.

Okfuskee County

In the Clearview Field, the Minnehoma Oil Co.'s No. 1 Grayson, NE NW SE, Section 31-11-11, swabbed 120 bbls. in 12 hours from the Lyons-Quinn sand at 3,030-34 feet and it is also making 500,000 feet of gas. This is the second producing well drilled in the pool.

Greater Seminole Production

Production of the Greater Seminole area for June 29 is as follows:

Pools—	Wells	Bbls.
Little River	342	78,104
Carr City	48	13,263
Maud	122	12,684
Mission	115	34,300
Bowlegs	303	34,388
Earlsboro	309	78,572
Seminole	272	33,767
East Seminole	14	5,893
Searight	77	12,116
St. Louis	360	78,282
Asher	10	9,379
Total	1,972	390,768

St. Louis Pipe Line Runs

The average daily pipe line runs from the St. Louis Field and the Asher Field for the past week are as follows:

Company—	Bbls.
Independent	4,972
Consolidated	3,010
Magnolia	26,195
Prairie	24,500
Oklahoma	1,002
Cosden	751
Tidal	4,175
Gulf	4,477
Texas	412
Sinclair	27,951
Shell	3,221
Total	100,666

Pipe Line Runs in Seminole Area

The daily average pipe line runs from the Seminole area for the past week are as follows:

Company—	Bbls.
Barnsdall	6,890
Champlin	4,903
Consolidated	336
Cosden	10,921
Continental	1,490
Empire	7,939
Gulf	32,513
Independent	0
Magnolia	21,227
Oklahoma	36,451
Prairie	60,639
Prod. & Ref.	2,125
Pure	2,655
Shaffer	3,756
Shell	19,222
Sinclair	37,200
Texas	15,700
Tidal	20,625
White Oak	3,583
Total	288,175
Tank cars	5,959
Grand total	294,134

Beckham County

Benedum & Trees' No. 1 Rogers, SW cor. Section 30-8-25w, has been abandoned at 2,305 feet.

Carter County

Ven Mex Oil Co. has moved rig material out for No. 1 Dixon, SE cor. NW, Section 30-1s-3w. The Prairie Oil & Gas Co. made location for No. 1 McCartney, NW cor. SE, Section 30-1s-3w. Arclow Oil Co. made location for No. 1 Cruce, NW cor. SE, Section 35-4s-2w.

Magnolia Petroleum Co.'s No. 9 M. Green, SW cor. NW, Section 13-1s-4w, made 148 bbls. in sand at 3,012-18 feet. Same company's No. 1 Suitor, NW cor. NE NE, Section 4-2s-3w, is dry and abandoned at 4,605 feet.

Custer County

Head & Amphlett's No. 1 Jones, SW cor. SE, Section 10-12-17w, has been abandoned at 353 feet.

Cherokee County

Shell Petroleum Corp.'s No. 1 Willey, NW cor. NE, Section 25-16-19, is a dry hole at 617 feet.

Cotton County

Silurian Oil Co.'s No. 3-P Chambers, NE cor. SE NW NW, Section 2-2s-10w, is rigging up. Clifford Moore and others' No. 4 Chambers, NE cor. SE SE NW, Section 2-2s-10w, is rigging up. Headrick and others' No. 1 Bull, SW cor. SE, Section 3-1s-10w, has been abandoned at 2,303 feet. Cullum & Perkins' No. 1 Patterson, SE cor. NE NE, Section 4-2s-10w, is dry and abandoned at 2,263 feet.

Creek County

Superior Oil Corp.'s No. 1 Holmes, SE cor. NE SE, Section 17-19-9, is drilling at 485 feet. Magnolia Petroleum Co.'s No. 26 Musselman, NE cor. SW SE, Section 8-18-7, is cleaning out to deepen from 2,530 feet. Bay State Oil Co.'s No. 18 Thilloco, SW cor. SE NW, Section 9-18-7, an old well being deepened, is fishing at 1,537 feet. Silurian Oil Co. made location for No. 28 W. Starr, SE cor. NW NW, Section 17-18-7.

The Texas Company made location for No. 9 Derrisaw, NE cor. SW SW, Section 6-17-7. Texas Pacific Coal & Oil Co. has the rig up for No. 8 Harjoche, SW cor. SE NE, Section 21-17-9. J. A. Hull Oil Co. has a machine on the location for No. 1 Davis, NE cor. SE SE, Section 11-17-11. Jackson & Wise's No. 10 Grayson, CWL SW SW, Section 3-15-11, is drilling at 300 feet.

J. E. Abbott and others' No. 1 Petraseck, NE cor. SW, Section 12-19-9, is dry and abandoned at 2,736 feet. Magnolia Petroleum Co.'s No. 7 Dix, CEL SE SE, Section 32-18-7, has been completed for 10 bbls. in sands at 2,260-80 feet and 2,593-2,658 feet.

The Texas Company's No. 3 M. Gooden, SE cor. SW SE, Section 16-17-7, is pumping 15 bbls. from sand at 2,756-2,835 feet after plugging back from 2,917 feet. Blackwell Oil & Gas Co.'s No. 11 Tiger, NE cor. SE SW, Section 17-17-7, made a 60-bbl. well in sand at 2,664-2,716 feet. The Prairie Oil & Gas Co.'s No. 5 Litchfield, NE cor. NW NE, Section 21-17-7, was deepened to Tucker sand at 2,823-28 feet and completed for 462 bbls. in 19 hours. Hamon and others' No. 1-A Peeper, NE cor. NW, Section 10-16-10, is dry and abandoned at 3,015 feet. C. G. Tibbens' No. 6 Lucas, NW cor. NE SE, Section 31-15-9, is a 5-bbl. well in sand at 2,297-2,357 feet.

Garvin County

Texas Pacific Coal & Oil Co. made location for No. 1 E. Jones, SE cor. SW, Section 18-1-2w.

Grant County

Consolidated Utility Co. and others' No. 1 Connell, NW cor. Section 24-28-3w, is dry and abandoned at 4,862 feet in Wilcox sand. Boucher and others' No. 1 Nelson, SW cor. SE, Section 1-27-3w, has been abandoned at 4,585 feet.

Haskell County

Charles Holden's No. 2 Phillips, NW cor. SW SE SE, Section 3-9-18, is spudding. No. 1 Phillips, SE cor. Section 3-9-18, has been completed for 100,000 feet of gas in sand at 1,670-1,700 feet.

Hughes County

Saul Steckelburg's No. 1 Sullivan, C NE NE, Section 11-9-10, is dry and abandoned at 1,210 feet. Independent Oil & Gas Co. and Kingwood Oil Co.'s No. 1 Scott, SW cor. SE SE, Section 6-8-9, has been shut in for 11,000,000 feet of gas in Cromwell sand at 3,608-15 feet. Independent Oil & Gas Co.'s No. 1 S. Marshall, NE cor. NW, Section 7-8-9, made 6,000,000 feet of gas in Cromwell sand at 3,559-81 feet. No. 1 W. Marshall, NE cor. SW, Section 7-8-9, was completed for 28,000,000 feet of gas in Cromwell sand at 3,564-69 feet.

Jefferson County

Roy Johnson and Wirt Franklin Oil Corp.'s No. 1 Sanders, SE cor. NW, Section 10-4s-8w, has been abandoned at 3,007 feet. Monahan & Porter made location for No. 1 Paddock, NE cor. NW NW, Section 35-5s-7w.

Kay County

Royal Oil & Gas Co.'s No. 1 Fulton, C SE NE, Section 12-28-1w, is dry and abandoned at 1,040 feet. Industrial Oil & Gas Co.'s No. 1 Clift, SE cor. NW, Section 35-28-1w, has been completed for 250,000 feet of gas in sand at 783-85 feet.

Kiowa County

Alexander and others moved a spudder to the location for No. 2 Dittmar, NE cor. SW SE, Section 18-6-16w.

Latimer County

J. S. Cochran and others' No. 1 Cushing, NW cor. SE SE, Section 36-7-22, has drilled to 2,100 feet and shut down.

Le Flore County

Red Bank Oil Co.'s No. 1 fee, SE cor. SW NW, Section 23-9-24, is fighting a cave at 2,795 feet.

Lincoln County

Texas Pacific Coal & Oil Co.'s No. 1 Seabo, NW cor. Section 19-16-5, has been abandoned at 4,600 feet.

Muskogee County

Jolly & Stone's No. 1 McDaniel, CSL SE SW, Section 33-16-15, is an old well cleaning out to deepen from 1,450 feet. J. M. Foltz and others' No. 1 Grimmett, SE cor. NE, Section 9-15-17, is reaming 8-inch pipe to 1,298 feet. James Lyon and others' No. 1 Dean, NW cor. SW NE, Section 23-14-17, is a machine. Mazda Oil Co. moved a machine to the location for No. 2 Jackson, CEL SE NW, Section 8-13-16.

Robinson Brothers' No. 3 Lewis, NW cor. SW NE, Section 8-13-16, is drilling at 1,100 feet. Decius & Garrett's No. 1 Sewell, SW cor. SE, Section 17-13-17, is spudding. H. D. Johnston and others' No. 2 Smith, NW cor. SE SE, Section 13-13-18, is spudding.

C. W. Betz, trustee's No. 1-A Friday, CNL NE NE, Section 7-15-15, is dry and abandoned at 1,767 feet. E. Price's No. 4 Woodall, CSL SW SW, Section 20-15-16, has been abandoned at 1,340 feet. Cherokee Public Service Co.'s No. 2 Grimmett, SW cor. NW, Section 10-15-17, lost the hole and has been abandoned at 1,291 feet. R. E. Kimsey's No.

1 Harrod, NW cor. SE NW SE, Section 24-15-17, is dry and abandoned at 2,285 feet.

W. J. Metzger's No. 9 Francis, CWL SE SW, Section 1-14-18, has been abandoned at 985 feet. M. S. Mussellem's No. 1 McCullouch, SW cor. Section 34-14-19, is a dry hole at 1,510 feet. Mazda Oil Co.'s No. 1-A Jackson, NE cor. SE NW, Section 8-13-16, has been completed for 75 bbls. in sand at 1,637-50 feet. H. D. Johnson and others' No. 1 Smith, SE cor. Section 13-13-18, made 1,500,000 feet of gas in sand at 714-25 feet.

Noble County

The Prairie Oil & Gas Co. and T. B. Slick's No. 1 Waltermire, SW cor. NE, Section 33-21-1w, has been completed for 28,000,000 feet of gas in sand at 3,422-37 feet.

Okfuskee County

Producers & Refiners Corp. moved the rig in for No. 5 Monarye, SE cor. Section 29-12-10. Champlin Oil & Refining Co. is repairing the rig to deepen No. 1 Carter, SE cor. SW, Section 15-11-11. W. L. Umburn and others' No. 2 Robinson, SW cor. Section 1-10-11, is rigging up. The rig is on the ground for No. 1-A Barnett, CEL NE NW, Section 3-10-11.

Mid-Continent Petroleum Corp.'s No. 1 L. McCoy, SW cor. NE NE, Section 31-11-11, has been completed for 24,000,000 feet of gas in sand at 3,082-90 feet. Misner & Kingwood Oil Co.'s No. 2 Robinson, SE cor. SW NW, Section 12-10-11, made 25 bbls. in sand at 1,570-90 feet.

Okmulgee County

Edgerly and others' No. 1-A Brown, NE cor. SE, Section 28-15-13, is drilling at 830 feet. Denton & Marshall's rig is up for No. 1-A McKinney, NE cor. NW, Section 16-15-14. Mechlin & Berlin's No. 8 Colbert, CEL SE NE, Section 14-14-14, is drilling at 150 feet. F. D. Misener moved a machine to the location for No. 2 B. Colbert, CEL SE NW, Section 14-14-14.

J. E. Wallace has a machine on the location for No. 8 V. Colbert, NW cor. SE SW NE, Section 14-14-14. Kessler Petroleum Co.'s No. 5 Colbert, C NW NW, Section 16-14-14, is drilling at 1,325 feet. J. H. Rebold Oil Co.'s No. 6 Hardridge, SW cor. SE NE, Section 27-13-14, is drilling at 100 feet.

J. N. Buzzard's No. 1 Clarkson, NW cor. SE NW, Section 32-15-13, is making 3,000,000 feet of gas in sand at 1,994-2,042 feet. Denton & Marshall's No. 1 Jefferson, NE cor. SE SW, Section 25-15-14, has been completed for 250,000 feet of gas in sand at 1,290-95 feet. J. M. Scott and Shaffer Oil & Refining Co.'s No. 1-A Cornelius, SW cor. SE, Section 10-14-12, is dry and abandoned at 2,653 feet.

J. E. Wallace's No. 7 V. Colbert, C SW NE, Section 14-14-14, made 40 bbls. in sand at 1,054-72 feet. Kessler Petroleum Co.'s No. 4 Colbert, CNL NW NW, Section 16-14-14, is dry and abandoned at 1,285 feet. Tiger Mountain Oil Co.'s No. 4 S. Tucker, CSL NE SE, Section 2-13-14, has been abandoned at 2,008 feet. A. H. Howard's No. 1-A Doyle, CEL W half SE SW, Section 17-13-14, has been abandoned at 650 feet.

Osage County

Phillips Petroleum Co. is erecting the rig for No. 17, NW cor. SE NW, Section 23-27-5. Indian Territory Illuminating Oil Co.'s No. 413, SE cor. NE SE, Section 6-25-11, is rigging up. Tidal Oil Co. has a machine on the location for No. 6, SE cor. NW SE, Section 20-24-9. Peters Petroleum Co.'s No. 3-A, NW cor. NE SW, Section 32-24-9, is drilling at 745 feet.

Mid-Co Oil Co. made location for No. 1, NE cor.. NW, Section 13-22-9. Clint Moore estate and others' No. 2, SW cor. NW NE, Section 16-21-9, is drilling deeper at 2,309 feet. Carter Oil Co.'s No. 1, SE cor. SW NW, Section 34-26-6, has been completed for 40 bbls. at 2,887 feet after plugging back from 2,911 feet.

Pawnee County

Bartlett and others' No. 1-B Martin, NE cor. SE SE, Section 15-20-9, is rigging up for a gas test. Jackson and others' No. 7 Smith, NE cor. SW NW, Section 25-20-9, is drilling deeper at 2,035 feet. Gled Oil Co.'s No. 1 Scully, NW cor. NE NE, Section 25-21-7, has been completed for 75 bbls. in Siliceous lime at 2,675-52 feet.

RECAPITULATION SHEET JUNE 27, 1929

Company	Little River	Carr	Maud	Mission	Bowlegs	Earlsboro	Seminole	East Seminole	Searight	Total
Amerada	1,120	....	2,920	1,080	800	1,250	897	....	316	8,383
Atlantic	....	....	....	....	992	105	484	....	....	1,581
Barnsdall	1,582	2,782	....	....	319	6,482	1,086	21	30	12,302
Blackwell	2,216	....	....	....	....	....	....	....	....	2,216
Bryan-Emery & Carter	13	....	....	....	....	....	....	....	....	13
Burke-Greis	....	....	....	....	....	2,325	....	....	....	2,325
Carter	9,450	1,700	....	1,590	3,215	2,985	6,715	....	4,714	30,369
Champlin	805	....	....	....	....	....	....	....	....	805
Continental	1,788	....	....	....	....	532	....	2,366	....	4,686
Cosden & Co.	....	....	....	....	....	1,697	....	....	....	1,697
Darby	....	....	8	80	....	....	....	....	....	88
Dixie	....	....	....	....	40	....	....	....	....	40
Empire	772	4,646	949	....	395	1,666	261	....	....	8,689
Gypsy	13,598	1,323	707	11,542	2,958	12,388	2,653	597	1,284	47,050
Independent	6,308	....	210	3,598	....	1,777	1,895	....	....	13,788
I. T. I. O.	2,936	5	129	....	7,512	....	2,589	....	....	13,171
King.-Shell	....	....	....	....	....	....	418	....	....	418
Laurel	....	....	215	....	....	....	....	....	....	215
Magnolia	1,147	603	320	....	1,907	15,819	132	16	902	20,840
Marland	....	....	....	956	....	....	....	219	....	1,175
Marland-Shaffer	270	....	....	....	....	....	....	....	....	270
Marland-Shell	....	....	122	....	....	....	....	....	....	122
McCullough	1	....	....	....	120	....	....	....	....	121
McMahon	....	....	....	870	....	....	....	....	....	870
Mid-Continent	8,530	....	70	110	771	3,325	710	....	1,710	15,226
Mid-Kansas	....	....	....	5	....	35	....	....	....	40
Minnehoma	....	....	....	578	43	....	....	....	....	621
Pine	1,510	....	465	737	....	....	....	....	14	2,726
Pine-Phillips	175	....	....	....	....	....	....	....	....	175
Papoose	....	....	....	....	....	....	....	....	532	532
Phillips	....	....	315	....	....	687	90	....	....	1,092
Prairie	6,675	2,200	180	2,158	4,570	10,659	4,654	....	84	31,180
Prairie-Slick	1,065	....	....	235	....	....	....	....	....	1,300
Pure	4,637	....	1,705	....	5,048	....	5,491	....	820	17,701
Reiter-Foster	642	....	....	....	....	....	....	....	....	642
Shaffer	170	....	....	1,220	445	187	....	15	....	2,037
Shell	2,335	....	....	....	52	1,733	262	....	150	4,532
Shell-Marland	....	....	....	1,031	....	....	....	....	....	1,031
Shell-Papoose	....	....	....	1,721	....	....	....	....	....	1,721
Sinclair	2,250	1,356	1,027	1,239	4,453	2,810	2,259	2,015	1,480	18,889
Skelly	1,571	....	355	....	....	2,017	....	....	....	3,943
Skelly-Atlantic	....	....	....	....	....	1,842	....	....	....	1,842
Snowden-McSweeney	475	....	....	....	....	....	....	....	....	475
Superior	3	....	....	....	....	2,557	115	....	30	2,705
Texas	1,362	....	355	....	780	1,437	110	....	20	4,064
Texas-Indep.	2,175	....	....	....	....	....	....	....	....	2,175
Tidal	439	....	360	1,665	1,255	3,670	1,672	....	....	9,001
Turman	....	....	....	....	....	....	1,621	....	....	1,621
Twin State	70	....	150	3,560	....	90	....	....	125	3,995
Wilcox	....	....	2,209	....	....	....	....	....	190	2,399
Total prod..	76,090	14,615	12,711	33,975	35,675	78,975	34,114	5,243	12,401	302,899
Total wells.	340	47	121	115	303	308	272	14	77	1,597

Payne County

Mote & Wheeler and others made location for No. 1 McLaughlin, SE cor. NW NW, Section 7-17-5. Gardner and others' No. 1 Barnes, C SW NW, Section 13-19-1w, is dry and abandoned at 4,837 feet.

Pittsburg County

Quinton Relief Oil Co.'s No. 1 Houston, C SW SE, Section 9-7-18, is drilling at 400 feet. Robert Galbreath's No. 1 Snyder, C W half SW, Section 28-4-13, is setting surface pipe.

Pontotoc County

Denver Producing & Refining Co. made location for No. 2 Roberts, NE cor. SE NE, Section 36-5-4. Superior Oil Corp.'s No. 4 Maulden, NW cor. SW NW, Section 32-5-5, Beebe area, is pumping 100 bbls. from Viola lime at 2,448-2,586 feet. Westheimer & Daube's No. 1 Smith, SE cor. NW NW, Section 10-4-7, is dry and abandoned at 4,132 feet in Wilcox sand.

Pottawatomie County

Empire Oil & Refining Co. and others made location for No. 1 Keys, SE cor. Section 6-9-5, Earlsboro Pool. Flake Oil Corp. has the cellar dug for No. 1 Reade, SE cor. NW NW, Section 8-9-5. No. 1 Earlsboro Townsite, Lot 6, Block 1, NE cor. SE NW, Section 8-9-5, is a cellar also. Phillips Petroleum Co. has dug the cellar for No. 1 Weldfeld, NW cor. Section 26-8-4. Indian Territory Illuminating Oil Co. is building the rig for No. 2 Shobe, SW cor. SE SE, Section 35-8-4.

Empire Oil & Refining Co. moved the rig in for No. 1 Jackson, SW cor. SE SW, Section 36-8-4. Wilcox Oil & Gas Co. has the rig on the ground for No. 7 Smith, SW cor. NE SE, Section 8-8-5. The rig is also on the ground for No. 8 Smith, SE cor. NE SE, Section 8-8-5, Maud Pool. Shell Petroleum Corp. has the cellar dug for No. 1 Jordan, SW cor. NW, Section 9-8-5. Frank Moore made location for No. 1 Fundis, SE cor. NE, Section 19-7-3.

Independent Oil & Gas Co. made location for No. 3 Borrows, NE cor. NW NW, Section 1-7-4, North St. Louis area. Location has also been made for No. 4 Borrows, NW cor. NE NW, Section 1-7-4. Magnolia Petroleum Co. is building the rig for No. 1 M. Jones, NW cor. NE SE, Section 8-7-4. The rig is being built for No. 2 M. Jones, NE cor. NW SE, Section 8-7-4. Atlantic Oil Producing Co. and Champlin Oil & Refining Co.'s No. 1 Bewley, SE cor. NW SE, Section 9-7-4, is a cellar. Magnolia Petroleum Co. moved the rig in for No. 1 Tarter, SW cor. NW SW, Section 15-7-4.

Location was made for No. 2 Richardson, SW cor. Section 15-7-4, Pearson-St. Louis Field. Darby Petroleum Co. is building the rig for No. 6 Youngblood, NW cor. SE NW, Section 16-7-4. Tom Slick Oil Co. and White Eagle Oil & Refining Co.'s No. 2 Latimer, NE cor. SW NW, Section 16-7-4, is rigging up. Independent Oil & Gas Co. has the cellar dug for No. 2 Pappan, SE cor. Section 16-7-4. Independent Oil & Gas Co. and Darby Petroleum Co. made location for No. 1 Curly, NW cor. SE NW, Section 22-7-4. Simms Oil Co. made location for No. 1 Pappan, NW cor. NE NE, Section 29-6-4, Asher Pool.

Mid-Continent Petroleum Corp.'s No. 3 Rogers, SE cor. SW SW, Section 5-9-5, flowed 1,675 bbls. from Wilcox sand at 4,309-26 feet. Superior Oil Corp.'s No. 1 Pratt, NE cor. NW NW, Section 13-8-4, is dry and abandoned at 4,512 feet. Magnolia Petroleum Co.'s No. 1 Green, SE cor. NW, Section 20-8-5, Maud Pool, made a 60-bbl. well in Simpson sand at 4,727 feet. Independent Oil & Gas Co.'s No. 1 Rhodd, NW cor. Section 16-7-4, Pearson-St. Louis Field, flowed 3,780 bbls. from Simpson sand at 4,012-71 feet.

Reynolds Royalty Co.'s No. 1 Asher Townsite, center of Block 8, Highland Addition, SE cor. SW SW SE, Section 18-6-4, Asher Pool, is dry and abandoned at 4,090 feet in Viola lime. Tom Slick Oil Co.'s No. 1 Bledsoe, NW cor. SW NW, Section 20-6-4, produced 1,150 bbls. from Viola lime at 3,630-3,700 feet. No. 1 Welden, SW cor. NW NW, Section 20-6-4, swabbed 540 bbls. from Viola lime at 3,678-3,733 feet. The Prairie Oil & Gas Co. and others' No. 1 Rice, SW cor. NE, Section 17-7-4, was completed for 1,530 bbls. in Simpson sand at 4,100-45 feet.

Seminole County

Barnsdall Oil Co. made location for No. 5 Hotulke, NE cor. SE, Section 22-7-6, Little River Pool. Gypsy Oil Co. made location for No. 17 Cotcha, SW cor. NE SW, Section 23-7-6. Indian Territory Illuminating Oil Co. and others made location for No. 1 Chatkey, SW cor. NE, Section 12-10-6. Magnolia Petroleum Co. has the rig on the ground for No. 2 Moore, NE cor. SE, Section 24-9-5, Earlsboro Pool. Gypsy Oil Co. moved the rig in for No. 2 S. Payne, NE cor. SE, Section 18-9-6.

Magnolia Petroleum Co. made location for No. 6 A. Anderson, NW cor. SW NE, Section 18-9-6. The rig is on the ground for No. 5 A. Anderson, SE cor. NE, Section 18-9-6. No. 5 A. Anderson, SE cor. NE, Section 18-9-6, is also a rig on the ground. Barnsdall Oil Co. has the cellar dug for No. 1 Dixon, NE cor. NW SW, Section 18-9-6. Magnolia Petroleum Co. made location for No. 7 A. Anderson, NW cor. NE SW, Section 18-9-6. Marland Producing Co. moved the rig in for No. 1 Smith, SE cor. SW NW, Section 18-9-6.

Carter Oil Co. and others' No. 1 Community-Amerada, SW cor. NW SE, Section 11-9-6, is a cellar. Sinclair Oil & Gas Co. made location for No. 2 Bob Coody, NW cor. SW NE, Section 18-9-7, East Seminole Pool. Continental Oil Co. is building the rig for No. 4 Johnson, NE cor. SE NW, Section 18-9-7. No. 3 Johnson, NW cor. SE NW, Section 18-9-7, is also a rig under construction. Sinclair Oil & Gas Co. made location for No. 2 Johnson "B," NE cor. SW NW, Section 18-9-7. Location was also made for No. 3 B. Coody, SE cor. SW NE, Section 18-9-7.

Sinclair Oil & Gas Co. and Gypsy Oil Co.'s No. 1 Okfuskee, SW cor. NW NE, Section 18-9-7, is a rig going up. Sinclair Oil & Gas Co. made location for No. 1 G. Johnson, SE cor. NE NW, Section 18-9-7. The Prairie Oil & Gas Co. made location for No. 7 Baker, SE cor. NE, Section 24-9-5. No. 1 Townsend, C S half NE SW, Section 6-8-6, is drilling deeper at 4,262 feet. Magnolia Petroleum Co. made location for No. 2 C. Reed, SW cor. NE, Section 4-8-7. Gypsy Oil Co. has the rig on the ground for No. 18 Cotcha, NW cor. SW, Section 23-7-6, Little River Pool. The Texas Company has dug the cellar for No. 6 D. Hotulke, SW cor. NW, Section 23-7-6. The Prairie Oil & Gas Co. and T. B. Slick's No. 1 Anna, NW cor. SE, Section 31-6-7, is rigging up.

Carter Oil Co.'s No. 1 Community-Skiff, SE cor. NE, Section 10-9-6, pumped 160 bbls. from Wilcox sand at 4,198-4,215 feet. No. 1 Community-Slick, NE cor. NW SW, Section 11-9-6, was completed for 1,745 bbls. in Wilcox sand at 4,132-16 feet. Shaffer Oil & Refining Co.'s No. 4 Weaver, SE cor. NW NE, Section 12-8-5, Mission Pool, pumped 55 bbls. in 11 hours from Simpson sand at 4,140-45 feet.

Twin State Oil Co.'s No. 3 Ripley, NE cor. SE NE, Section 12-8-5, is dry and abandoned at 4,408 feet. Gypsy Oil Co.'s No. 10 Cotcha, SE cor. SW SW, Section 23-7-6, Little River Pool, has been completed for 25,000,000 feet of gas in sand at 3,112-62 feet. Gypsy Oil Co.'s No. 11 Cotcha, SW cor. SE SW, Section 23-7-6, has been completed for 40,000,000 feet of gas in Gilcrease sand at 3,160-84 feet.

No. 13 Cotcha, SE cor. NE SW, Section 23-7-6, has been shut in for 37,000,000 feet of gas in Gilcrease sand at 3,115-52 feet. No. 14 Cotcha, NE cor. NW SW, Section 23-7-6, is making 25,000,000 feet of gas in Gilcrease sand at 3,168-80 feet. Mid-Continent Petroleum Corp.'s No. 3 Eleck, NW cor. NE SE, Section 23-7-6, has been completed for 18,000,000 feet of gas in Gilcrease sand at 3,140-65 feet. Magnolia Petroleum Co.'s No. 1 Harjo, NE cor. SE, Section 34-6-7, is dry and abandoned at 4,722 feet in Wilcox sand. No. 4 Reed, SE cor. SW NW, Section 17-5-8, swabbed 225 bbls. from Cromwell sand at 2,583-2,625 feet.

Stephens County

Baldwin & Sultan's rig is up for No. 1 Rhone, NW cor. SE SE, Section 35-1s-10w. Sykes & Fossett's rig is up for No. 1 Brake, NW cor. NE SW, Section 16-1s-8w. Winkler & McQueen's No. 6 Springer, SE cor. NW SE NW, Section 28-1s-8w, is rigging up. Hupp & Duff's No. 6 Burke, SW cor. NE, Section 34-1s-8w, is drilling at 950 feet. Lone Eagle Oil Co.'s No. 12 Simpson, NE cor. NW SE, Section 34-1s-8w, is drilling at 1,200 feet. Murphy Oil Co.'s No. 16 Fobb "B,"

SE cor. NW SW, Section 12-2s-8w, is rigging up. Magnolia Petroleum Co. made location for No. 5 Marks, NW cor. NE SE NE, Section 13-2s-8w.

Smythe and others' No. 1 Shaw, C NE NE, Section 27-2-8w, has been abandoned at 2,603 feet. Ellis Drilling Co.'s No. 3 Ketchem, SW cor. NW NW, Section 25-1-9w, is dry and abandoned at 2,335 feet. Clark & Cowden's No. 4 Davidson, NW cor. SW, Section 13-1s-4w, made 120 bbls. from sand at 2,948-49 feet.

Tillman County

Wirt Franklin Oil Corp.'s No. 1 H. Zweig, C NW, Section 25-1s-18w, is dry and abandoned at 3,501 feet.

Tulsa County

Mitchell County Oil Co.'s No. 1 Barnett, SW cor. NE SE, Section 1-18-12, has been abandoned at 2,037 feet. C. L. Sherman's No. 1 Davis, NE cor. NW NW, Section 9-16-14, is a dry hole at 2,108 feet.

Wagoner County

J. E. Martin and others' No. 2 Drew, NE cor. SE SW, Section 26-18-15, is drilling at 500 feet. Ash Brothers' No. 1 Love, SE cor. NE SW, Section 15-18-17, is drilling at 630 feet. Mid-Co. Oil Co.'s No. 2 Drew, SE cor. SW, Section 15-18-17, is drilling at 480 feet. Ash Brothers' No. 1-A L. Childers, NE cor. NW, Section 22-18-17, is drilling at 680 feet. M. H. Gleason's No. 6 Henry, NE cor. SE NW SW, Section 29-18-15, is dry and abandoned at 1,665 feet.

Production in Seminole Area

Production of pools in the Seminole area by companies and leases for June 27 follows:

Little River Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Nitey	2-7-6	3	355
Amerada-Wilcox:			
Pore	35-8-6	2	765
Barnsdall:			
Cotcha	23-7-6	2	395
Hotulke	22-7-6	3	1,180
Walker	4-7-6	1	7
Blackwell:			
Baker	11-7-6	4	1,150
Nitey	35-8-6	5	336
Talley	14-7-6	4	730
Bryan & Emery:			
Walker	4-7-6	1	13
Carter:			
Cotcha, M.	23-7-6	3	115
Cudjo, L.	22-7-6	2	440
Fish	36-8-6	4	670
Harjo, C.	11-7-6	3	2,580
Harjo, M.	13-7-6	4	700
Jackson	11-7-6	4	685
B. Larney	26-7-6	1	410
Larney	24-7-6	4	1,935
Lena	10-7-6	1	540
Moore	11-7-6	2	55
Tewee	14-7-6	6	850
Thomas	11-7-6	1	300
Wilson	12-7-6	1	170
Champlin:			
Tewee	14-7-6	2	805
Continental:			
Cosar	36-8-6	7	1,003
Cosar, M.	25-8-6	1	327
Continental & Fisher:			
Milsey	11-7-6	2	458
Empire:			
Charty	24-7-6	1	74
Coker	13-7-6	2	662
Cotcher	27-7-6	1	26
Sandlin	3-7-6	1	10
Gypsy:			
Brown, C.	33-8-6	2	307
Brown, M.	33-8-6	1	965
Campbell	36-8-6	2	15
Conard	22-7-6	2	232
Cosar, W.	36-8-6	2	200
Cotcha	23-7-6	11	5,102
Denmark	11-7-6	3	1,250
Hulhoke	14-7-6	10	1,410
Mungee	1-7-6	1	0
Payne	5-7-7	2	3,145
Pottie	35-8-6	4	795
Renton	11-7-6	3	177
Independent:			
Carpenter	27-7-6	3	840
Davis, R.	13-7-6	4	1,250
Tewee	14-7-6	6	1,408
Reed	26-7-6	1	93
Williams	15-7-6	1	580
Independent & Highway:			
Harris	23-7-6	9	1,837
Independent & White Eagle:			
Davis	2-7-6	4	300
I. T. I. O.:			
Campbell	1-7-6	1	5
Dungan	35-8-6	3	484
House, M. A.	1-7-6	1	38
House, W. E.	1-7-6	1	26
House, "B"	2-7-6	4	711
Hull	26-8-6	3	5
Jackson	1-7-6	3	500
McCulla	1-7-6	3	689
Nitey	2-7-6	5	123
Phoebe "A"	36-8-6	2	32
Phoebe "B"	36-8-6	3	57
Reed	1-7-6	1	8
Soketheche	1-7-6	3	258
Magnolia:			
Cruse	2-7-6	4	120
Denby	11-7-6	4	208
Harjo, A.	14-7-6	2	55
Harjo, B.	14-7-6	2	200
Pottie	35-8-6	4	56
Reed, E.	31-8-7	1	28
Reed, I.	22-7-6	3	480
Marland & Shaeffer:			
Harrison	4-7-7	1	270
McCulloch & Sands:			
Harrison	4-7-6	1	1
Mid-Continent:			
Brunner	11-7-6	4	110
Eleck	23-7-6	1	30
Smith	5-7-7	5	8,210
Wadsworth	36-8-6	7	180
W. B. Pine:			
Hoyecha	26-8-6	7	1,510
Pine-Phillips:			
Pottie	35-8-6	1	175
Prairie:			
Chilcoat	25-8-6	3	500
Coker	1-7-6	2	640
Gibson	14-7-6	5	1,210
Harris	14-7-6	4	565
House	2-7-6	4	135
Johnson	24-7-6	2	127
Lustey	5-7-7	2	60
Moppin	24-7-6	2	240
Reed	13-7-6	2	790
Talley	14-7-6	4	420
Thomas	5-7-7	1	178
Williams	15-7-6	2	356
Wood	26-7-6	3	325
Slick:			
Cudjo	26-7-6	4	1,065
Prairie & Amerada:			
Sunny	14-7-6	5	1,130
Pure:			
Brinson	24-7-6	3	1,265
Cotcha	14-7-6	10	2,062
Harjo	11-7-6	4	1,310
Hollins	11-7-6	1	0
Reiter-Foster:			
Bunyard	14-7-6	4	630
Jefferson	31-7-6	1	12
Shaeffer:			
Narcombe	36-8-6	2	170
Shell:			
Caesar	11-7-6	1	86
Glass	26-7-6	1	0
Hotulke	23-7-6	4	820
Johnson	13-7-6	4	1,429
Sinclair:			
Blanton	11-7-6	1	160
Cosar	30-8-6	3	875
Haney	12-7-6	1	90
Tewee	14-7-6	2	1,125
Sinclair & Kingwood:			
Pompey	24-7-6	1	0
Skelly:			
Carl	14-7-6	2	1,571
Snowden-McSweeney:			
Tiger	13-7-6	2	475
Superior:			
Potulka	31-8-6	1	3
Texas:			
Brooks	25-8-6	1	15
Coker	1-7-6	3	7
Janey	11-7-6	6	1,340
Texas & Independent:			
Hotulke	23-7-6	5	1,440
Hotulke	22-7-6	3	735
Tidal:			
House	1-7-6	2	415
Johnson	1-7-6	1	24
Twin State:			
Lowe	25-8-6	1	70
Total		340	76,090

Carr City

Company, farm—	Location	Wells	Prod.
Barnsdall:			
Coker	11-8-5	8	2,585
Fife	14-8-5	2	197
Carter:			
Coker	2-8-5	1	1,700
Empire:			
Cluck	11-8-5	10	4,646
Gypsy:			
Coker	10-8-5	1	50
Coker	2-8-5	1	1,258
Fife	14-8-5	1	15
I. T. I. O.:			
Simpson	10-8-5	1	5
Tully	10-8-5	1	0
Magnolia:			
Fee	11-8-5	2	597
Killing	14-8-5	1	6
Prairie:			
Billington	11-8-5	10	2,055
Mitchell	15-8-5	1	145
Sinclair:			
Bear	11-8-5	3	438
Harjo	11-8-5	3	918
Total		47	14,615

Maud Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Ballard	1-8-4	1	50
Fehlig	7-8-5	1	80
Gossland	8-8-5	3	235
Gravel	1-8-4	1	15
Hallum	1-8-4	4	2,140
Amerada & Barnsdall:			
Wallace	17-8-5	3	285
Amerada & Hull:			
Green	20-8-5	3	115
Darby:			
Ketcham	19-8-5	1	8
Empire:			
Smith	8-8-5	1	949
Gypsy:			
Bourassa	7-8-5	4	82
Miller	18-8-5	8	625
Independent:			
Harding	18-8-5	5	210
I. T. I. O.:			
State	16-8-5	1	129
Laurel O. & G.:			
Billington	18-8-5	3	215
Magnolia:			
Billington	8-8-5	4	140
Green	20-8-5	1	180
Marland & Shell:			
Everett	18-8-5	1	122
Mid-Continent:			
Shelton	18-8-5	3	70
Phillips:			
Hudson	19-8-5	4	185
Wallace	17-8-5	2	130
Pine:			
Lingefelt	18-8-5	2	30
Smith	8-8-5	1	435
Prairie:			
Campbell	18-8-5	8	160
Prairie & White Eagle:			
Villines	20-8-5	1	20
Pure:			
Lindly	18-8-5	8	343
Urbansky	19-8-5	2	90
Wiley	8-8-5	4	1,272
Sinclair:			
Bellars	19-8-5	10	580
Calvin	7-8-5	3	352
Lewis	6-8-5	2	95
Skelly & Lenox:			
Green	20-8-5	1	130
Skelly & Margay:			
Lingefelt	18-8-5	4	225
Texas:			
Calvin	7-8-5	8	355
Tidal:			
Dunn	12-8-4	1	50
Everett	18-8-5	2	100
Smith	8-8-5	1	150
Twin State:			
Calvin	7-8-5	2	150
Wilcox:			
Smith	8-8-5	5	2,209
Total		121	12,711

Mission Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Rice	5-8-6	2	1,080
Carter:			
Fuswa	18-8-6	4	850
Melisse	9-8-6	1	650
Micco	8-8-6	2	90
Darby:			
Judy	1-8-5	1	80
Gypsy:			
Baby	6-8-6	1	15
Barkus, N.	6-8-6	10	6,182
Barkus, S.	7-8-6	1	170
Dosar	7-8-6	5	1,413
Hardy	7-8-6	7	297
Harjoche	7-8-6	4	210
Micco, L.	8-8-6	2	25
Micco, S.	8-8-6	1	30
Mission	5 & 6-8-6	7	2,097
Mosar	1-8-5	4	1,103
Independent:			
Lawson	1-8-5	5	1,578
Independent & Kistler:			
Payne	7-8-6	4	2,020
Marland:			
Maines	7-8-6	4	956
McMahon et al:			
Harjo	7-8-6	2	870
Mid-Kansas:			
Moore	7-8-6	1	5
Mid-Continent:			
Ripley	13-8-5	1	110
Minnehoma:			
Neal	7-8-6	4	578
Pine:			
Harjo	6-8-6	2	737
Micco	8-8-6	1	0
Prairie:			
Crain	7-8-6	1	198
Melton	6-8-6	3	1,510
Micco	5-8-6	1	10
Townsend	6-8-6	1	0
Prairie & Gypsy:			
Owens	18-8-6	1	440
Nellie	12-8-5	1	235
Shaffer:			
Weaver	12-8-5	3	1,220
Shell & Marland:			
Herndon	7-8-6	3	1,031
Shell & Papoose:			
Maines	7-8-6	8	1,721
Sinclair:			
Hardy	7-8-6	4	1,176
Sinclair & Lenox:			
Judy	1-8-5	1	63
Tidal:			
Nelly	12-8-5	5	1,665
Twin State:			
Hayes	8-8-6	2	1,365
Judy	6-8-6	2	1,720
Ripley	12-8-5	1	475
Total		115	33,975

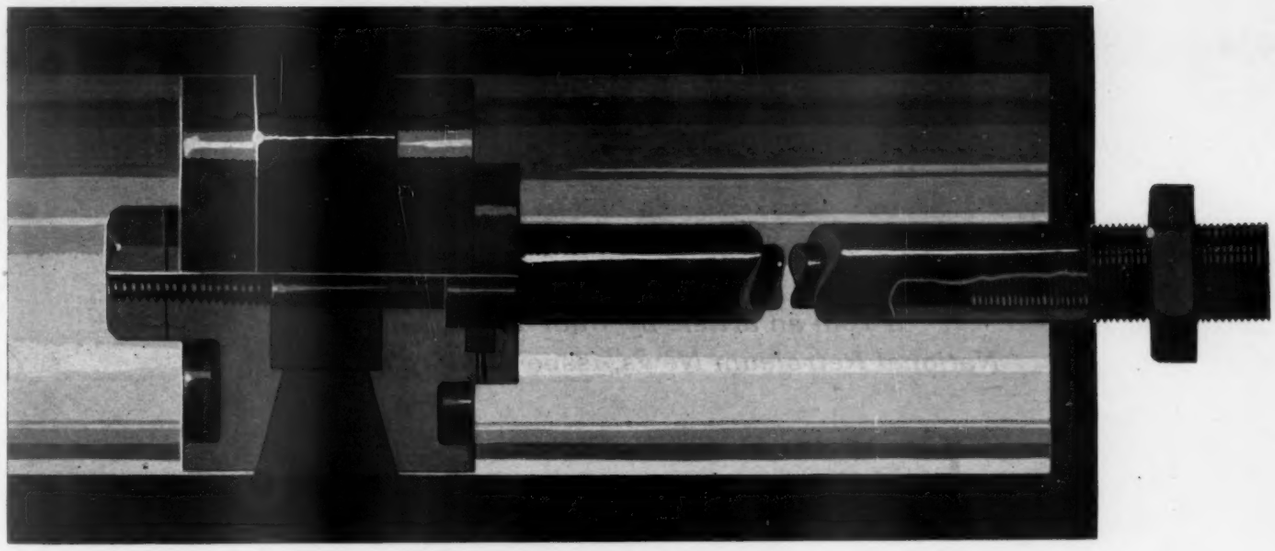
Bowlegs Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Roscoe	15-8-6	6	800
Atlantic:			
Baker	10-8-6	4	297
Fleet	23-8-6	3	105
Grayson	13-8-6	4	500
Jones, A.	16-8-6	2	30
Jones, C.	9-8-6	1	60
Barnsdall:			
McNac	28-8-6	1	22
Murrow	11-8-6	4	297
Carter Oil:			
Bowlegs	15-8-6	4	380
Burden	23-8-6	2	227
Harjoche	14-8-6	6	450
Hilly	23-8-6	3	205
Jones	11-8-6	4	480
Walker	15-8-6	4	332
Wise	23-8-6	11	1,141
Dixie:			
Culley	11-8-6	1	40
Empire:			
Lacy	14-8-6	6	242
Wise	23-8-6	2	153
Gypsy:			
Bowlegs	22-8-6	1	0
Bradley	9-8-6	1	0
Cumsey	10-8-6	4	613
Grayson	13-8-6	4	390
Harjoche	10-8-6	3	405
Jones	11-8-6	1	0
Walker	15-8-6	7	1,445
Wise	23-8-6	2	105
I. T. I. O.:			
Barnett	24-8-6	2	127
Barnett "B"	23-8-6	1	41
Billington	22-8-6	1	328
Bowlegs	22-8-6	9	1,136
Davis	13-8-6	4	129
Fay	13-8-6	9	1,009
Goforth	15-8-6	12	1,441
Livingston	15-8-6	10	1,571
Lizzie	13-8-6	3	441
Walker	15-8-6	8	755
Williams	12-8-6	1	216
Wilmott	15-8-6	4	204
Work	24-8-6	1	53
Youngblood	24-8-6	2	64
Magnolia:			
Davis	13-8-6	3	377
Davis, M.	13-8-6	1	80
Hammond	10-8-6	8	670
Rhodes	12-8-6	5	400
Van Buskirk	9-8-6	4	380
McCulloch:			
Bowlegs	22-8-6	2	120
Mid-Continent:			
Baker	10-8-6	4	201
Smith	12-8-6	6	570
Minnehoma:			
Bowlegs	15-8-6	3	43
Prairie:			
Gahagan	23-8-6	3	285
Harber	10-8-6	8	1,320
Jones	3-8-6	1	315
Jones	11-8-6	4	210
Templeton	12-8-6	4	2,000
Whitney	23-8-6	4	440
Pure Oil:			
Reed	14-8-6	14	2,514
Strother "D"	11 & 14-8-6	4	398
Strother "F"	10-8-6	7	2,136
Shaffer:			
Lacy	14-8-6	3	445
Shell:			
Taylor	16-8-6	5	52
Sinclair:			
Cumsey	10-8-6	4	830
Harjo	14-8-6	3	500
Jones	9-8-6	7	390
E. Jones	11-8-6	5	623
Taylor	10-8-6	4	780
Taylor, W.	10-8-6	3	330
Walker	22-8-6	4	1,000
Texas:			
Reed	14-8-6	11	780
Tidal:			
Grayson	13-8-6	4	425
Harjoche	10-8-6	6	830
Total		303	35,675

Earlsboro Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Anderson	15-9-5	2	263
Cowden	4-9-5	7	909
Foreman	3-9-5	2	78
Atlantic & Sinclair:			
Foreman	18-9-5	1	105
Barnsdall:			
Brown	10-9-5	3	1,320
Bruner, F.	2-9-5	2	149
Bruner, N.	10-9-5	1	242
Cudjo	14-9-5	1	23
Davis, D.	11-9-5	3	168
Davis, J.	11-9-5	4	1,105
Davis, M.	11-9-5	2	37
Gibson	9-9-5	7	769
Hern	15-9-5	1	1
Ingram	1-9-5	7	365
Pack, S.	10-9-5	4	87
Peter	10-9-5	3	37
Sango	1-9-5	2	1,480
Sebalka	15-9-5	1	208
Sullivan, H.	11-9-5	1	6
Sull-Harjo	10-9-5	2	19
Wasutke	12-9-5	3	466
Burke-Greis:			
Wisner	6-9-6	2	400
Burke-Greis & Red Bank:			
Mays	1-9-5	3	1,925
Carter:			
Davis	13-9-5	3	165
James	6-9-6	3	1,515
Carter et al:			
Gilliam	13-9-5	2	1,305
Continental:			
Kays	2-9-5	2	27
Spencer	12-9-5	4	505
Cosden, J. S., Inc.:			
Anderson	13-9-5	2	1,697
Empire:			
Barker	12-9-5	1	15
Edmondson	3-9-5	2	35
Empire & Marland:			
Anderson	13-9-5	1	456
Empire & Amerada:			
Bullock	8-9-5	2	1,160
Gypsy:			
Bruner	10-9-5	4	1,545
Carter, B.	11-9-5	7	2,101
Earl	16-9-5	1	17
Hunick	5-9-5	2	1,712
Noble	12-9-5	4	927
Payne	18-9-6	1	3,099
Peter	10-9-5	1	107
Sango	1-9-5	13	2,630
State	16-9-5	3	250
Independent:			
Bruner	10-9-5	3	143
Sullivan	10-9-5	1	13
Knapp	8-9-5	2	1,441
Indep.-Margay:			
Gains	11-9-5	3	180
Magnolia:			
A. Anderson	18-9-6	4	8,834
D. W. Anderson	18-9-6	1	2,570
Bryant	9-9-5	6	43
Cowden	4-9-5	2	15
Dixon	12-9-5	1	16
Edmondson	3-9-5	1	3
Germany	30-9-5	1	20
Gilliam	13-9-5	3	2,756
Holmsley	11-9-5	6	5
Hyde	13-9-5	2	225
Ingram	10-9-5	1	16
Lena	10-9-5	3	40
Moore	24-9-5	1	887
Seay	12-9-5	9	122
Simpson	10-9-5	4	116
Sparks	11-9-5	6	84
Sullivan	12-9-5	3	67
Mid-Continent:			
McCumber	9-9-5	4	50
Rogers	5-9-5	4	3,275
Mid-Kansas:			
Anderson	14-9-5	1	35

(Continued on Page 142)



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When pumping mud against extra high gas pressure the BJ Pep Piston is especially desirable. It will not leak when heavily loaded. The same amount of expansion is maintained regardless of the pressure in the well—and this expansion is positive. The sleeve expands the rubber, giving an automatic action. The BJ Pep Piston can be adjusted and tightened without taking the head off of the pump. You simply tighten the sleeve.

The mud can't leak through the rod. A rubber seal packs between the sleeve and follower.

The head plate screws onto the rod by a tapered thread and locks by a lock-nut at the end of the rod.

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From an article by Paul Truesdell in
National Petroleum News, issue of March 27, 1929

"To crack or not to crack?

"There are two schools of thought in the refining business as to the answer. One group says, when crude is cheap and refined products markets are depressed, make your gasoline from the crude, shut down the cracking plants and sell the fuel oil for whatever it will bring, lest the additional gasoline made by cracking depress the market that much more.

"The other school says, cut down your crude runs and make the gasoline from the cheapest charging stock available, thereby keeping your costs as low as possible and increasing your chances of making a profit in a low market.

"It seems to me that the latter school has the right of it, in the long run at any rate. It certainly is more in line with economic laws to get the utmost possible gasoline out of the crude run, gasoline being the most valuable product, generally speaking, than it is to get a smaller yield of gasoline and sell the reduced crude for an inferior use at a losing price.

"Talking with refiners indicates that the latter school of thought is gaining recruits."

Refiners of the latter school are dividend payers, at the same time promoting conservation

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
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Good Wells in Muskingum County

Larger Wells in Central West Field Reported from Central Ohio Area. Jackson County Had Only One Good Gas Well Completed

By Whit
Staff Correspondent, Central West Fields

FINDLAY, OHIO, July 1.—The larger oil wells of the week in the Central West Field were distributed in the Central Ohio division. Muskingum County is credited to two where No. 1 on the Anderson lease, produced an initial of 140 bbls. and No. 3 on the Ella Denney showed an initial of 130 bbls. while Licking County developed a 120-bbl. initial producer on the Sol Weaver lot. Only one good gas well was numbered in the week's review and that was a test on the Julian Hill lease, in Jackson County, also in Central Ohio.

In the old Lima Field of northwestern Ohio the Napoleon Oil Syndicate's test, on the W. M. Mercer, Section 14, Liberty Township, produced an initial of 12 bbls. George L. Haubert and others' No. 5 on the Catherine Smith, Section 29, Perrysburg Township, same county, produced but 1 bbl. in 24 hours, and William F. Johnson is drilling on the H. L. Schroeder, Section 33, same township. Glass and Shellenberger's second test on the Henry Brandeberry, Section 32, Perry Township, same county, struck salt water and was given up as a failure. In Lake Township, Lantz and others are drilling on the F. L. Stone, Section 32.

In Hancock County no new completions were reported, but L. Cramer is drilling No. 3 on the Sol Fry, Section 31, Liberty Township. Star and Clark are drilling No. 13 Alice Stauffer, Section 6, Eagle Township; No. 12, brought in some time ago, produced 15 bbls. initial. Ridge Oil and Gas Syndicate has a rig in for No. 3 on the Elnora Cross, Section 35, Biglick Township. Ohio Oil Co. abandoned No. 4 on the John E. Moorehead, Section 22, Portage Township, and No. 14 on the I. W. Whetstone, Section 13, Allen Township.

The June Oil Co. is drilling on the Paul J. Fought, Section 11, Washington Township, Sandusky County. In Jackson Township, same county, Frank Shall and others are drilling a second test on the James Shaw, Section 31, and Cessna, Feasel and Lowman are drilling a second test on the Mary E. Betts, Section 29.

Tiffin Field

In the Tiffin Field, Liberty Township, in the vicinity of the Murphy Pool, the Sun Oil Co. and others drilled a dry hole in No. 5 on the J. Hunker, Section 28. Feasel and others got a dry hole on the W. C. Rosenerger, Section 36, while the August Oil Co.'s No. 3 A. Fletcher, Section 27, pumped 7 bbls. In Jackson Township, the Columbus-Tiffin Oil & Gas Co.'s No. 1 on the J. L. Newson, Section 18, is a 5-bbl. pumper. In Pleasant Township, T. J. O'Brien drilled a dry hole on the Ida M. Rosenberger, Section 31, then turned the lease over to W. J. Poyser and others who are drilling a second test on the farm. The Ohio Oil Co. is drilling No. 2 on the Charles B. Miller, Section 31, same township. The discovery well on the Charles B. Miller 400 acres was drilled by J. H. Murphy & Sons, and showed 360 bbls. initial from a total depth of 1,443 feet, or 25 feet in the sand and disposed of the 400-acre block and the well to the Ohio Oil Co. for a reported consideration of $100,000. The Murphys are natives and reside at Bourgoon, Ohio, and made a very nice pickup, not alone in the well, but in the Murphy Pool, in Liberty Township, same county, which they opened by drilling the discovery well there on the Hunker farm.

INDIANA

No new completions were reported from the southern or southwestern parts of Indiana, the three wells reported being in the old Trenton Rock area. In Jefferson Township, Adams County, George S. Lacknett and others' second test on the Otto Baker, Section 4, pumped 30 bbls. in 24 hours, and Scoofakes & Hefflin's No. 4, on the Clark Standley, Section 34, Wabash Township, same county, produced an initial of 10 bbls. under pump.

F. E. Rickow drilled a dry hole on the Harley DeMoss, Section 36, Liberty Township, Delaware County, in the Muncie Field.

In southwestern Indiana, the Murphy Oil Co. abandoned No. 11 Alice Frederick, Section 6, Washington Township, Gibson County.

In Sullivan County, Fairbanks Township, the William C. Kennedy Co. abandoned Nos. 2 and 3 on the Isaac Harman, Section 33. The H. & S. Oil & Gas Co. did the same with Nos. 1, 2, 3, 4 and 5 Albert Poe, Section 12. V. S. Welch and others pulled out No. 6 on the Nancy A. Denny, and No. 1 John T Wilcox, Section 14, same township. J. L. Bowman, receiver, is drilling No. 3 Elmer E. Williams, Section 5, same township. In Gill Township, same county, the Dome Oil Co. is drilling deeper its No. 1 on the Morris Unger, Section 26, which was drilled to a depth of only 600 feet.

In Prairie Creek Township, Vigo County, the Siosi Oil Corp. is drilling No. 2 Lennie Thomas, Section 32, and Pearce and others are drilling No. 4 F. E. Shattuck, same section.

ILLINOIS

Only three completions were reported from the Illinois fields and all in Crawford County. Grant Jessup and others' test on the John Ackerman, or rather the Porterville Oil Co.'s well, produced an initial of 50 bbls. W. C. McBride, Inc., drilled in a 3-bbl. pumper in a second test on the C. L. Petty, Section 13, Martin Township. In Licking Township, Walter Squires and others' No. 6 Marks & Croft, pumped but 1 bbl. from a depth of 971 feet.

CENTRAL OHIO

Twenty-three completions were reported from the Central Ohio area, of which 10 were oil wells with an initial production of 269 bbls., 4 dry holes and 9 gas wells. There were 20 locations staked out for new wells and 36 wells started rigging up, spudding or drilling, a total of 56 for the week, which indicates that there is no letup over any part of the large field. The best of the late oil completions was a 130-bbl. producer in Muskingum County. The gas wells of late do not show the volume of the earlier ones.

In Ashland County, Orange Township, the Ohio Fuel Gas Co.'s No. 1-3,518, on Peter Hiller, Section 25, is reported dry. James Burtner, trustee, is starting No. 1 on the W. D. Atterholt farm, in Vermillion Township. Lake Township is the most active in the county, owing to the finding of both commercial oil and gas wells, the oil is coming to a large extent from the upper and lower Berea pay sand. The Ohio Fuel Gas Co.'s No. 1-3,596, on the Ellis A. Moores, Sections 3 and 4, of this township, is reported good for 20 bbls. of oil and a fair gas volume. Mohican Oil & Gas Co.'s No. 3 on the D. B. Chesrown 45 acres, Section 3, same township, is a light gas producer and produced an initial of 30 bbls. of Berea sand oil. Robinson and others' No. 1 J. A. Heffelfinger, Section 16, is reported good for 4 bbls. from the Berea sand, and No. 2, same farm, is drilling. Davis and others are drilling on the L. O. Chesrown, Section 3, and Shetler & Shetler are drilling No. 1 on the Cemetery Association property, Section 15, same township. Coast and others are drilling No. 3 Ed Barnhart, Section 29, Perry Township. In Mohican Township, B. Slagel is drilling No. 2 on the A. and H. Metcalf, Section 21, and W. J. Smith is drilling a second test on the W. J. Obrecht, Section 32. Kemrow Co. is drilling No. 1 R. W. Topping, Section 1, Montgomery Township, same county.

In Medina County, Medina Township, the Ohio Fuel Gas Co. has an average gas well in No. 1-3,519 on the Adam Leister, Section 8, and made a location for No. 2-4,760 on the John Gunkleman, Section 11. In Lafayette Township, the same company made a location for No 1-4,755 on the J. E. Gault, Section 6.

In Lorain County, Grafton Township, the Ohio Fuel Gas Co. made a location for No. 1-4,758, Charles A. Schaeffer, Lot 47, and also a location for No. 1-4,761, J. B. Crowley, Section 1, Eaton Township. Daugherty and others are drilling on the Henry Smith, Section 7, Carlisle Township.

Wayne County

In Wayne County, Wooster Township, Vanover and others drilled a dry hole at a second test on the Charles Laper, Section 9. In Chester Township, the Ohio Fuel Gas Co.'s No. 1-4,705, on the S. E. Stelzer, Section 16, is a good gas producer and was formerly reported as the Logan Gas Co. Same company is drilling No. 1-4,728 on the J. W. Trigg, Section 13, and made a location for No. 1-4,757 on the Sam C. Martin, same section. Kemrow Co. made a location on the P. J. Swinehart, Section 14, same township. In Clinton Township, the Southern Oil Co. is drilling on the Frank Aylesworth, Section 7, and Brown and others are drilling a second test on the P. W. Moulte, Section 1.

In Holmes County, Monroe Township, the Preston Oil Co. is drilling No. 2-1,324 on the Lizzie Rambacker, Lot 16, and the Arkansas Fuel Oil Co. made a location for No. 3 James T. Patterson, Lot 12.

In Richland County, Monroe Township, the Ohio Fuel Gas Co.'s No. 1-3,455, on the Fred Mengert, Section 29, is an average gas producer. Same company is drilling No. 1-3,456 on the H. H. Tarris, Section 20.

In Knox County, the Ohio Fuel Gas Co. made a location for No. 5-4,756 on the Elmer D. Pryor, Section 3, Brown Township, and the Upham Gas Co. is drilling on the William Hoovler, Section 1, Monroe Township.

In Coshocton County, Clark Township, the Clark Oil Co.'s No. 9 Jesse B. Lawrence, Section 5, produced 10 bbls. of oil and about 100,000 feet of gas. Ohio Fuel Gas Co. made a location on the D. and L. Rine, Section 4, Pike Township, and the Preston Oil Co. set a stake for a second test on the Henry M. Rine, same section. Bell Brothers are drilling No. 2 Mart Mizer, Section 18, Newcastle Township.

Summitt County

In Summitt County, Greene Township, F. A. Brendall and others have a duster on the Hubert Boettler, finding no commercial production in the deep Clinton lime formation. George Egan's test on the Mary Yarrick, Section 3, is an average gas well. East Ohio Gas Co. is drilling No. 1 C. E. and L. M. Diehl, Section 3, and G. W. Crouse is drilling a second test on the G. W. Crouse, Section 18. In Franklin Township, the East Ohio Gas Co. is drilling on the Nancy Rhodes, Section 23, and made a location for No. 2 on the J. C. Baum, Section 27.

In Licking County, Fallsburg Township, the Emerald Petroleum Co. made a location for No. 4 James A. Little, Section 8. In Perry Township, Settles Oil Co. is drilling No. 2 Nellie Smith, Section 17. Sterl Brown is drilling No. 4 Ethel Frost, Section 14, and the Whitehill Oil Co. is drilling No. 3 J. C. Burkholder, Section 3. Preston Oil Co.'s No. 2 Ollie Lear, Section 5, is said to show for 50 bbls. Ohio Fuel Gas Co. made a location on the Louisa J. Georgetta, Section 23, Madison Township, and in Licking Township, the Heisey Gas Co. is drilling No. 8 on the Joseph Davies heirs, Section 7.

In Muskingum County, Falls Township, the Athey Drilling Co. is drilling on the H. M. Ludeman farm, and the same company made a location on the W. T. Osborne, Section 7, Rich Hill Township. Ohio Fuel Gas Co. is drilling No. 1-3,610 Amelia Smith, in the third quarter section of Falls Township. Midland Oil & Gas Co.'s No. 3 Ella Denney, Section 18, Hopewell Township, is reported to have produced an initial of 130 bbls. H. C. Farmer is drilling on the Alex McConnaughey farm, Section 10, Highland Township. In Perry Township, Palmer & Geisinger have what looks like a light well on the H. E. Hanes, third quarter, which shows an average gas volume. Ohio Fuel Gas Co. made a location for No. 1 E. H. Berry, Section 3. Mid-East Gas Co. has a location on the C. M. Tom, Section 16, and also on the Everett J. Moore, Section 16. Hope Construction Co. is drilling No. 8 on the W. E. Helphrey, Section 6, Jackson Township.

Athens County

In Athens County, Ames Township, Charles Fox and others' second test on the Robert Bean, Section 13, is reported good for 10 bbls. from the first Cow Run at from 183 to 191 feet. Orondorff and others are drilling No. 1 Kaeler Sayer, Section 23, and the Ohio Fuel Gas Co. is drilling No. 2-3,524 on the George Linscott, Sections 5 and 6, same township. Same company made a location for No. 6-4,561 on the J. W. Kincaid, in fractional Section 1, Carthage Township. In Lodi Township, Janes-Wysong Gas Co.'s test, on the John Buck, Section 2, was dry in the Salt and Maxon sands at a total depth of 1,628 feet. In Rome Township, the Ohio Fuel Gas Co. is drilling a wildcat in No. 1-3,599 on the W. and C. Richardson, Sections 1-31. Three Way Oil Co. is drilling on the S. C. Cross, Section 19, Lee Township.

In Meigs County, Sutton Township, C. W. Cuywood & Palmer's test on the Thomas Wolfe, Section 10, estimated at 5 bbls. in the first Cow Run sand at from 480 to 510 feet. Tyree and others' No. 10 William Carnahan, Section 11, is also a 5-bbl. initial pumper in the same formation at from 600 to 612 feet. Same firm is drilling No. 2 Mary Jividen, Section 23, and No. 6 on the Hanna M. Capehart, Section 30, same township. H. W. McTaggert and others' second test on the Lydia Rowley, Section 13, Scipo Township, is a very light gas well in the Macksburg sand at a depth of 717 feet, or 9 feet in the sand. In Salisbury Township, F. Leifhart's second test on the C. G. Greenlee, Section 36, is a 5-bbl. pumper in the upper Berea sand at 1,620 feet.

In Jackson County, Franklin Township, the Ohio Fuel Gas Co.'s No. 2-

(Continued on Page 146)

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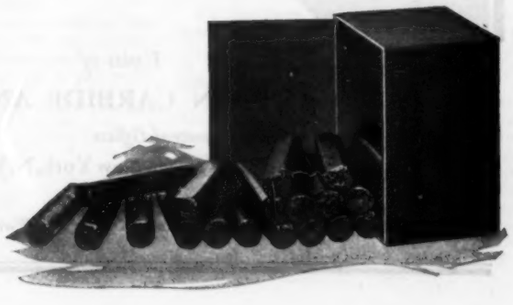

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West Virginia Turning to Gas Pressure

Increasing Production of Old Wells That Have Declined to Small Pumpers. More Drilling in Advance of Production

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., July 1. — The Eastern fields made a better show during the past week than for any like period in a great many months. More and better wells were completed and the new production was much larger. The result at the close of the current month will be better than for any one month during the first six of the year.

General conditions remain very much the same. The demand for gasoline has been increasing rapidly and the consumption will be greater than any previous year. The demand for Pennsylvania grade crude is very great and far below the requirements of the refineries.

SOUTHEAST OHIO

Southeast Ohio completed all the good producers. In the northwest quarter of Section 4, Jackson Township, Muskingum County, the Pure Oil Co. completed and shot in the Clinton sand a test on the C. D. Anderson farm. It flowed 140 bbls. the first 24 hours. In Section 15, Perry Township, the Preston Oil Co.'s test on the P. E. Arnold farm is a gasser good for 2,420,000 feet and is spraying oil at the rate of 10 bbls. a day.

In the southwest quarter of Section 28, Coal Township, Perry County, the Chartiers Oil Co. completed No. 211 on the Sunday Creek Coal Co.'s property, good for 75 bbls. In Lot 4, Clarke Township, Coshocton County, the Ohio Oil Co. completed in the Clinton sand a second test on the Robert Rhode farm. It produced 120 bbls. the first 24 hours.

In Section 35, Bethel Township, Monroe County, the Hope Construction & Refining Co. completed in the Squaw sand No. 10 on the Knowlton heirs' farm. It produced 135 bbls. the first 24 hours and is the largest shallow sand well completed in a number of years. In Section 30, Franklin Township, the Sylvania Producing Co.'s second test on the C. W. Windland farm, is good for 25 bbls.

In Howard Township, Knox County, the Preston Oil Co. completed in the Clinton sand a test on the John L. Owen farm which produced 25 bbls. the first 24 hours. In Section 15, Perry Township, Licking County, the Preston Oil Co. completed in the Berea grit No. 4 on the Ollie E. Loar farm, an 8-bbl. pumper. In Section 14, same township and county, Sterl C. Brown completed in the same formation No. 4 on the Ida J. Frost farm, as a small gas well.

Dusters in Perry and Licking

In the southeast quarter of Section 4, Jackson Township, Perry County, J. E. Elder & Co. completed No. 7 on the Ida Householder farm. It is dry and abandoned in the Bera grit. In the northeast quarter of Section 17, Licking County, the Ohio Fuel Supply Co.'s No. 3 on the E. F. Gutridge farm, found no oil in the Clinton sand and only a light gas pressure.

In Section 30, North Township, Harrison County, the Mitchell Oil Co. completed in the Berea grit a light pumper on the A. J. Crawford farm. In Section 30, Orange Township, Carroll County, the Lee-Seville Oil & Gas Co. has a dry hole in the Berea grit at No. 7 on the T. E. Tripp farm.

Washington County

At the head waters of Sheets Run, Grandview Township, Washington County, J. T. Knowlton & Co. have a light gasser in the Maxon sand at No. 5 on the R. E. Myers farm. At the head of the same stream and in the same township, the Sheets Run Oil Co. completed in the Big Injun sand a duster on the Joseph Jones heirs' farm.

In the northeast quarter of Section 4, Perry Township, Coshocton County, the Kundtz-Hulse Co., Inc., completed and shot in the Clinton sand a test on the C. W. Speckman farm. It produced 20 bbls. the first 24 hours. In Section 15, Lawrence Township, Washington County, J. T. Campbell and others have completed in the Maxon sand a duster on the Harvey McCain farm.

In Section 36, Independence Township, Washington County, James Rinard and others have started to drill on the Charles Enochs farm. In Section 29, Washington County, the Preston Oil Co. started to drill No. 1,507 on the Sunday Creek Coal Co.'s property.

Ashland County

Ashland County is completing some fair producers. In Section 9, Lake Township, I. C. Robinson & Co.'s No. 4, on the Emma C. Devinney farm, is a 10-bbl. pumper. In the same section, the same company has a 20-bbl. pumper on the John Smith lot. The same company's test on John Smith farm is a 10-bbl. pumper. The same company's test on the C. Sollers farm is a duster. The same company's tests on the H. C. Young, John Hefelfinger and Charles Morris farms are each good for 5 bbls.

In Section 24, Jefferson Township, Noble County, the Cain Oil & Gas Co.'s No. 5 on the Alice Mullett farm is a duster. The rig for No. 6 on the same farm has been completed. In the same section, E. P. McGinnis and others are drilling on the Henry J. Heil farm. In Franklin Township, Monroe County, Gordon G. Greene is drilling on the Matthew Brown farm.

In the southwest quarter of Section 15, Perry Township, Muskingum County, Palmer & Gusinger completed in the Clinton sand a test on the Harry Hines farm. It is a duster, but has a fair gas pressure.

In Section 5, Salt Creek Township, Holmes County, the Ohio Fuel Gas Co. has a duster in the Clinton sand on the A. D. Kilgore farm. It has been plugged and abandoned.

Duster in Noble County

In the southwest quarter of Section 32, Enoch Township, Noble County, D. E. King and others have completed in the Buell Run sand a duster on the R. A Greer farm. They found about 18 feet of broken sand but it contained no oil. In Sutton Township, Meigs County, the Southern Oil Co. has completed in the Macksburg 500-foot sand No. 10 on the Scott Harris farm. It is a duster.

In the SE Section 13, Harrison Township, Perry County, Guthrie & McIntire have completed on the A. Cannon farm a gasser good for 200,000 feet.

Meigs County

In Lot 1,218, Sutton Township, Meigs County, the Southern Ohio Gas Co. completed No. 4 on the Lucius Cross farm as a 4-bbl. pumper in the Berea grit. In Section 18, same township, the Preston Oil Co. has a 5-bbl. pumper in the same formation at No. 6 on the Carl J. and William R. Easterday farm. In the same township, B. M. Tyree has started to drill on the William Carnahan farm.

In Section 21, Harrison Township, Perry County, the Pure Oil Co. drilled into the Clinton sand No. 3 on the Charles Baker farm. It is a gasser good for 200,000 feet and will be drilled deeper when the gas pressure subsides.

In Section 11, Sutton Township, Meigs County, the Twenty-Five Association, Inc. completed No. 10 on the William Carnahan farm, as a 4-bbl. pumper in the Cow Run sand. In Lot 283, same township, B. M. Tyree has started to drill on the J. N. Carnahan farm. In Section 11, same township, the Southern Ohio Petroleum Co. has started to drill on the Peter Karr farm.

WEST VIRGINIA

In Geary district, Roane County, the Virginian Gasoline Oil Co. completed in the Big Injun sand a second test on the W. C. Tallman farm. It is a 3-bbl. pumper. The oil will be run to Clay station. In Sherman district, Calhoun County, the Hope Natural Gas Co. completed a test on the T. S. Cunningham farm, a 5-bbl. pumper in the Big Injun sand. The location is 5,000 feet south of C. B. Lewis & Co.'s test on the Everett Proudfit farm.

On Plum Run, Williams district, Wood County, Charles S. Smith completed in the Cow Run sand No. 5 on the Timothy McAtee farm. It is a duster.

Gas Pressure Increases Production

In the lower West Virginia counties producers are resorting more and more to putting gas pressure on wells that have declined to small pumpers. On Jordans Creek, Big Sandy district, Kanawha County, the Virginian Gasoline & Oil Co. has turned a gas pressure into the Squaw sand on the Ida L. Weaver farm. Its production has been increased from 3 to 6 bbls. a day. The same company gave its test on the N. B. Fitzwater farm the same treatment, increasing its production from 1½ bbls. to 3 bbls. In the same locality, the South Penn Oil Co.'s well on the F. M. Young farm was increased from 1 to 3 bbls. a day.

Deep Sand Gasser

In Hackers Creek district, Lewis County, Frank Fletcher has drilled a second test on the Smith farm. It is a gasser in the Benson sand at a total depth of 4,150 feet. The Benson sand is the deepest gas producing formation in West Virginia In Clay district, Wetzel County, the Pittsburgh & West Virginia Gas Co. has drilled a test on the Lula A. Clarkson farm into the Gordon sand and the hole has filled up 500 feet with fluid. In Harvey district, Mingo County, the Public Gas Corp. has a fair gasser in the Maxon sand at No. 11 on the Logan Cannel Coal Co.'s property.

Roane County is completing some fair producers. In Geary district, the South Penn Oil Co. completed No. 9 on the Catherine H. Nixon farm, good for 30 bbls. in the Big Injun sand. In the same district, the same company has completed No. 10 on the same farm and good for 25 bbls.

Gassers in Kanawha and Lincoln

On the waters of Tacketts Creek, Jefferson district, Kanawha County, S. W. Kirtley & Co. completed and shot a test on the Frank Wiseman farm. It is a gasser good for 250,000 feet. On Mud River, Carroll district, Lincoln County, Mesbon & Huggman completed No. 3 on the Courts heirs' farm. It is a gasser good for 175,000 feet in the Berea grit. At the head waters of Hurricane Creek, Curry district, Putnam County, the Rex-Ishman Oil & Gas Co. completed a light gasser in the same formation on the A. C. Kimbrough farm.

On Big Cove Creek, Troy district, Gilmer County, the Mud Lick Oil & Gas Co. has a gasser in the Big Injun sand on the Clinton Burton farm. It is a 1,000,000-foot gasser.

In McElroy district, Tyler County, the South Penn Oil Co.'s No. 4 on the Joshua Haught farm is dry and abandoned. In Murphy district, Ritchie County, the South Penn Oil Co.'s Nos. 18 and 19 on the Anna M. Wilson farm are good for 10 and 40 bbls., respectively, in the Maxon sand. In the same district, the Reno Oil Co.'s No. 12 on the J. L. Mullenax farm is dry and abandoned. J. F.

(Continued on Page 206)

SEVERAL FINE SHALLOW PRODUCERS COMPLETED IN THE BARTLETT POOL

By Whit
Staff Correspondent, Kentucky-Tennessee

OWENSBORO, Ky., July 1.—Remarkably fine shallow producers are being developed in the Bartlett Pool, near Taffy, in northern Ohio County, the most productive area in any part of Kentucky at this time, as six producers in that pool alone showed a combined initial production of 1,285 bbls. Ohio County is credited with a large number of completions since the last review of the field. Many strings of tools are busy cleaning out wells that have been brought in recently, and this with moving to new locations is keeping the industry busy at this time. Reports from the Greenville area of Muhlenburg County are that numerous new locations are being staked out and a few wells are pounding away toward the oil sand in the newly discovered oil pool in that part of the field. The discovery well of the Ohio Oil Co., near Greenville, according to reports, is still flowing at approximately 35 bbls. per day. It has not been shot, nor put under the pump, as there is no pipe line connection with the main line of the Illinois Pipe Line Co. that handles the greater portion of the production throughout the western Kentucky fields. A line has been put in a few miles from the well to the railroad where the oil is loaded in tank cars and shipped to a Louisville refinery. Oil men in general are of the belief that Muhlenburg County is in for a big play during the summer, and it will not be a bad guess to look for 30 to 50 rigs moving into that county before the summer season closes. Very little is doing in the central or eastern portions of the State at this time, as the Tri-County area and several of the adjoining counties appear to have the play and this activity has been a great thing for Owensboro, Hartford, Pellville, Whitesville and many of the smaller towns in that part of the State.

The gas line being put in from the Jones Pool, in Daviess County, to Owensboro is being rushed as the owners are anxious to be in shape to turn gas into the city within a short time, as July 1 is the date that connection of the line from the field and the distributing line in Owensboro should be completed.

Week's Work

A summary of the week's work on the Kentucky fields shows 30 completions, 20 producers with an initial production of 1,718 bbls., 6 dry holes and 4 gas wells.

County—	Comp.	Oil wells	Prod.	Dry	Gas
Ohio	21	15	1,522	3	3
Daviess	4	4	195	0	0
Warren	2	1	1	1	0
Hancock	2	0	0	1	1
Allen	1	0	0	1	0
Total	30	20	1,718	6	4

Ohio County

The Bartlett Pool, in northern Ohio County, comes to the front with a num-

(Continued on Page 135)

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

FULLER'S EARTH PRODUCED

Can you furnish any reliable figures about the quantity of fuller's earth produced in the United States and the localities where it is mined?—D. G. A.

The fuller's earth sold or used by producers in the United States in 1928 amounted to 287,012 short tons, valued at $3,895,991, it was announced June 19 by the Bureau of Mines, Department of Commerce, which has collected statistics in co-operation with the Geological Surveys of Florida, Georgia, Illinois and Texas.

This is an increase of 9 per cent in quantity and 3 per cent in value compared with 1927. Every producing state except Georgia showed an increase, and one state that has not reported production for many years—Colorado—re-entered the list of producers. The output was reported by 17 operators in eight states in 1928, namely, Arizona, Colorado, Florida, Georgia, Illinois, Massachusetts, Nevada and Texas. Georgia was the leading state in production in 1928, with Florida second and Nevada third. These three states produced 77 per cent of the total output. The average value per ton of fuller's earth was $13.57 in 1928 compared with $14.24 in 1927.

Fuller's earth is a term used to include a variety of natural substances that possess the property of absorbing grease or clarifying, bleaching or filtering oil. They are mostly clay-like substances, though recently discovered material in the West, which is of different character, is said to be of excellent quality.

The original use of fuller's earth was in the fulling of cloth, but little of it is now used for this purpose. It is used almost exclusively in the bleaching or filtering of mineral and vegetable oils, and animal fats, 98 per cent of the domestic output being used for these purposes in 1928; the remainder was used as a filler, a binder, for fulling cloth, etc.

Until 1895, when fuller's earth was successfully produced commercially in Florida, the United States was entirely dependent on foreign supplies. In 1928 the imports of fuller's earth were 7,592 short tons, valued at $132,003, practically the same in quantity, but an increase of 21 per cent in value compared with 1927.

VALUABLE PRODUCTS FROM NATURAL GAS

It will be of considerable assistance to me if you will give me the specific reference mentioned in The Oil and Gas Journal, April 18, 1929, page 82, to the publication of the Bureau of Mines describing processes for the preparation of various valuable products from natural gas.—D. N. E.

We are advised that there are several units of the Bureau of Mines that are investigating natural gas with particular reference to the possibilities of converting natural gas into various organic substances; however, this work has not progressed far enough to warrant publication. The material quoted below is communicated by the Pittsburgh Station.

The Physical Chemistry Section at the Pittsburgh Experiment Station, United States Bureau of Mines, is working on methods for utilization of waste natural gas. Preliminary to our experimental work we have considered, as well as may be, the economics of various possible methods for converting natural gas into ammonia, methanol, motor fuels and formaldehyde. We do not plan to publish any report at the present time, however, since the actual cost data are of necessity more or less speculative at the present time due to the lack of information on large scale plant operation.

Our experimental work has not yet progressed far enough to warrant publication.

There is considerable information in the literature in regard to small-scale production of benzol, tars, etc., from natural gas. The references are as follows:

1. Fischer, Brennstoff-Chemie, 9, 309 (1928).

2. Wheeler and Wood, Fuel, 7, 535 (1928).

3. Stanley and Nash, J. Soc. Chem. Ind., Jan. 11, 1929.

4. Hague and Wheeler, J. Chem. Soc. (London), p. 378 (1929).

In addition a paper was presented by Chamberlin and Bloom (Lehigh University) at the American Chemical Society Convention, Columbus, Ohio, April, 1929, on the same subject.

CAPACITY OF U. S. REFINERIES

What is the total daily capacity of all refineries in the United States? In what states is the largest number of these located? How many of the refineries have cracking units?—E. H. A.

According to the annual survey made by The Oil and Gas Journal, which was printed in the March 7, 1929, issue, there were 463 plants in the United States as of March 1st. In this survey the total daily capacity of these refineries was placed at 3,719,550 bbls., but 122 plants were reported to be shut down, and as these had an operating capacity of 265,200 bbls., the actual operating capacity of the remaining 341 refineries was 3,454,250 bbls. a day.

Texas, Oklahoma and California are the leading refining states, based on the number of plants, which are 104, 68 and 65, respectively. However, the daily capacity puts California in the lead with 909,450 bbls.; Texas is second with 809,050 bbls., and Oklahoma is third with 342,600 bbls. An interesting fact is that New Jersey, without a single oil well, stands fourth with a daily capacity of 300,000 bbls. and has only nine refineries.

Including the refineries under construction, there are 170 plants with cracking units. These have a daily capacity of 1,487,950 bbls. The standing by states for cracking capacity is Texas first, 412,400 bbls.; New Jersey second, 187,600 bbls.; California third, 117,000 bbls.; Oklahoma fourth, 116,750 bbls.

OKLAHOMA GASOLINE TAX

What is the State tax on gasoline sold in Oklahoma? How is the money derived from this tax distributed and used?—A. M. G.

The gasoline tax for Oklahoma was recently increased from 3 to 4 cents per gallon by legislative action. This new law became effective June 23, 1929. The material below is quoted from the new law:

"Section 1. There is hereby levied an excise tax of four cents (4c) per gallon on each and every gallon of gasoline consumed in the State of Oklahoma, to be reported and collected as hereinafter provided. Provided that ninety-seven (97%) per cent of the gallonage reported by the deputy inspector shall be the basis used in the computation of the amount of tax due the State.

"Section 2. That one cent (1c) of the tax on each gallon of gasoline raised by this act, shall be apportioned quarterly, by the State Commissioner of Highways, or his successor in office to each county in the State, in that percentage which the population, and area of each county bears to the population, and area of the entire State; that said fund after being apportioned shall be sent immediately to the county treasurer of each county to be deposited in the county highway fund, to be used by the county commissioners for the purpose of constructing and maintaining county or township highways and permanent bridges in such county. No part of this fund shall be used for any other purpose, except the construction and maintenance of county or township highways and permanent bridges in said county; provided that the fund herein created, when apportioned to the respective counties as herein provided shall not thereafter be diverted to any other county in the State, but shall only be expended in the county to which same was apportioned under the direction and control of the board of county commissioners. Where any state or county highway has been paid out over a road already constructed in any county by the use of money raised from county to township bond issues for the purpose either alone or by the use of Federal or State aid, or both the county commissioners may set aside out of the funds coming into that county from the gasoline tax above mentioned, an amount of money equal to the value or any part thereof of the interest of such county or township, or both, in and to such highway or highways, bridge or bridges, so constituting a part of the State Highway System, which amount of money shall be considered by the Excise Board under Section 8,576, Compiled Laws of Oklahoma, 1929, in reducing the levy for the purpose, of retiring the bonded indebtedness and interest thereon of the county or township, and shall be used for investment or deposit in the same manner as provided by law for the disposition of other sinking fund money.

"Section 3. Three cents (3c) of the tax on each gallon of gasoline produced by the said excise tax on gasoline shall be deposited in the State Depository to the credit of the State Highway Construction and Maintenance Fund, and which shall be expended as provided by law under rules and regulations not inconsistent therewith to be promulgated by the Highway Department. That the said fund so deposited shall be expended; First, in the repair and maintenance of state highways heretofore or hereafter constructed through the use of state funds with or without Federal aid, or the proceeds of county aid of bonds in connection with State or Federal aid; Second, in the construction of a primary system of state highways which shall fairly serve all parts of the State according to Chapter 48, of the Session Laws, 1923-24."

AUTOMOBILE OPERATING EXPENSE

Will you kindly give me what information you may have covering the operating cost for the average automobile?—P. D. S.

The most reliable data recently obtained on the cost of operating passenger automobiles is published in Bulletin 91 of the Iowa Experiment Station. The authors of this bulletin are Prof. T. R. Agg of the Iowa State College and Prof. H. S. Carter of South Dakota State College. These data were collected from a large number of individual owners and cover the operation of all classes of passenger cars, from light fours to big sixes. The average cost in cents per mile varied from a low of 4.6 cents for a light four roadster to 11.67 cents for a heavy six sedan. From all the data collected the cost of operating an "average" passenger automobile was determined. A table is given below showing the separate items of cost, the amount of each item in cents per mile and the percentage of the total of each item.

Item—	Cents mile	Pct.
(1) Gasoline	1.31	20.4
(2) Oil	0.22	3.4
(3) Tires and tubes	0.64	10.0
(4) Maintenance	1.72	26.7
(5) Depreciation	1.39	21.6
(6) License	0.14	2.2
(7) Garage	0.44	6.8
(8) Interest	0.36	5.6
(9) Insurance	0.21	3.3
Total	6.43	100.0

A study of the items in this table will show that the amounts spent for the first four depend directly on the mileage; the last four are fixed as charges and bear no relation to the mileage; the fifth item, depreciation, depends upon both age and mileage.

Keeping these groupings in mind a new table can be prepared as follows:

Group—	Cents mile	Pct.
(a) Mileage items	3.89	60.5
(b) Depreciation	1.39	21.6
(c) Fixed items	1.15	17.9
Total	6.43	100.0

The cost of the fixed items cannot, of course, be materially reduced. The mileage cost can be reduced by proper attention to the machanical condition of the car. For a great many owners depreciation is the big factor in the operation of an automobile, especially if the mileage each year is small.

It should be pointed out that the depreciation of 1.39 cents per mile as shown by the above table, will hold true only for operation of a car over the full period of its life. It will be shown later that this item amounts to considerablye more during the first two years of ownership of an originally purchased car.

It is probably safe to assume that many automobile owners neglect depreciation of their cars in determining the operating cost in cents per mile. Depreciation is the difference between the initial cost and the value of the car at the end of any assumed period of time. Any convenient time interval can be used, but it is a general practice among economists to use one year as the basic period of time for determining depreciation. For example, if a car is purchased for $1,500 and at the end of one year is sold for $870 the depreciation is $630. If during the year the car is driven 11,000 miles, the item of depreciation will be 5.73 cents per mile. Unless a car is driven a considerable mileage during the first year it will generally be found that the depreciation in cents per mile will be considerable for the first period. This is due to the large depreciation in the value of a new car just as soon as it has been driven out of the salesroom.

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Has served the oil fields of the world for 32 years

Steel Stairways and Runways

Much is being said today about "Safety First" and reduction of Insurance by elimination of fire hazards.

Parkersburg Steel Stairways and Runways are safe, the fire hazard is removed with the added features of being portable, easy to erect and strong.

These stairways are sectional. One section for 8 foot, two for 16 foot and three for 24 foot tanks

They are supplied with gates and guards when specified and are shipped with the parts neatly and conveniently nested.

Write today for Bulletin "S", it gives detailed information on Parkersburg Steel Stairways and Runways.

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EXECUTIVE OFFICES & MAIN PLANT

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Steel Derricks and Steel Crown Blocks	■	Rig Irons (A.P.I. Standard)	■
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Check the equipment in which you are interested, tear out and return this coupon, with your name and address, to us, and we will send you complete information on the items checked.

Greater Efficiency Obtainable With Baker-Burch Side Hole Cement Float Shoe

The Baker-Burch Side Hole Cement Float Shoe has certain features which make it more efficient in operation than the regular Baker-Burch Cement Float Shoe and for this reason it is given the preference in many operating areas. In landing and cementing long and heavy strings of casing, it offers the following advantages:

Free and easy circulation, at all times.

Circulation can be obtained when shoe is set solidly on the bottom and cannot be raised.

Circulation will not be shut off when the hole is tight at the bottom.

Gives better circulation in heavy or sandy mud than is otherwise possible.

Gives a more even distribution of the cement around the shoe and casing and the cement is less likely to channel.

Its records of performance have proven its superiority in hundreds of successful jobs in the deepest fields in the world.

Each item of the entire line of Baker Cement Equipment is the best for the purpose for which it was designed. Standardize on Baker Cement Equipment in your operations for greater efficiency and less grief.

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Baker Cement Equipment is the Universally-Accepted Standard in these particulars:

The cement is made according to a tested and proven formula which has demonstrated that it will not shatter or fracture in the hole.

The cement, while amazingly strong, is easily disintegrated under the drill and is disposed of either by circulation or into the formation.

The use of cement entirely eliminates the troubles and hazards common to the use of cast-iron equipment.

Baker Cement Equipment does not and cannot interfere, in any way, with subsequent operations. Baker Cement Equipment is the result of extended study, field experience, and testing under actual working conditions in the field, and assures the operator a line of equipment which is absolutely reliable, in every particular, with none of the troublesome features common to cast-iron equipment.

Baker Cement Equipment has been tried and tested in every field, under the most difficult conditions, with the greatest possible success, and operators everywhere are most enthusiastic about its reliability.

Baker Cement Equipment is the original and only equipment of its kind and it is fully protected by our Patents Nos. 1035674, 1491915, 1561768, and 1603447. Other Patents are still pending.

Baker Cement Equipment is made and tested in our laboratories and plant under the strictest supervision and the name "BAKER" is your guarantee of quality and reliability.

Specify BAKER Cement Equipment And Be Sure You GET It!

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It's Too Late to Be SORRY After You Have Lost the Hole!

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

DISCHARGE LINE RED HOT

For some time we have been using a two-stage compressor in a repressuring system, compressing air to about 200 pounds per square inch, but it was found desirable to raise this pressure to about 275 pounds per square inch. To accomplish this result the intake gate valve on the suction line was pinched to reduce the volume of air entering the low side of the compressor and the discharge valve to the atmosphere was opened more, and this change resulted in the discharge line heating to a cherry red in a few minutes and the compressor was shut down because its valves were heated so that they warped and would not seat. Can you give any information as to the cause and possible remedy for this trouble?—D. W. F.

To make your problem clear the accompanying sketch has been made to illustrate the conditions you have encountered as they are understood by this department. An analysis of the probable trouble follows:

With the compressor running at the proper speed and the valve "A" on the suction side pinched the volume of air at atmospheric pressure entering the low side of the machine would be reduced and the work of that side would be correspondingly cut down so that the air would pass out of the low side at approximately atmospheric pressure with no work having been done on it.

This air would pass through the intercooler and enter the high side of the compressor, where it would be compressed to about 275 pounds per square inch in one operation.

Compressing air from atmospheric pressure to 275 pounds in this manner would mean that the heat generated would equal about 775 degrees Fahrenheit and this hot air would be discharged directly into the outlet pipes and as a consequence they soon would become cherry red.

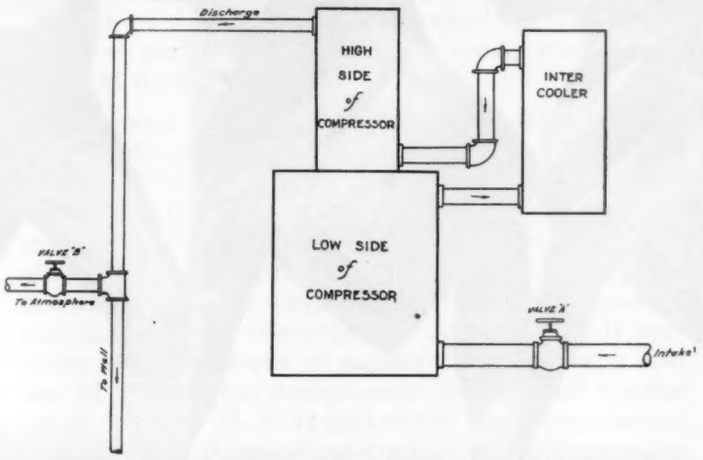
To remedy this trouble it is suggested that the gate valve on the suction side be opened to admit the full volume of air possible into the low side of the compressor. This will cause the intermediate pressure to be increased, and in this way the ratio of compression in the high-pressure cylinder will be lowered and the heat generated by this operation will not be excessive.

To control the volume of air entering the well it is suggested that the valve "B" on the discharge line be opened to atmosphere so that only that proportion of the compressed air that is actually needed be forced into the well.

It has been found from experience that the ratio of compression or the relation of the final to the initial absolute pressure should vary from 2 to 1 to 6 to 1 for high efficiency in operation. If these ratios of compression are exceeded the heat generated due to the work of compression would be too high to be handled in a satisfactory manner in this kind of equipment.

In the case cited with the high-compression cylinder receiving air at atmospheric or 14.4 pounds per square inch pressure, and discharging it at about 275 pounds plug atmospheric or 14.4 pounds, or 289.4 pounds per square inch pressure, the ratio of compression is approximately 19.3 to 1, far in excess of good practice.

With the changes suggested the work done in each cylinder will be well within the most efficient ratios of compression and the heating trouble should be eliminated.



Layout showing relative positions of intake and outlet valves of repressuring system.

HOW MUCH CEMENT IN PIPE?

In cementing casing it is a usual practice to leave cement in the pipe. How much cement should be left in to get best results?—G. G. N.

It is a good idea to leave sufficient cement in the casing to insure that a good solid mixture of cement is placed around the casing shoe. When a column of cement is pumped down a string of casing, any excess water tends to rise to the top of the column and the cement tends to settle. This leaves the top of the column very wet and consequently with a high water-cement ratio the strength is weakened. The longer it takes to place the cement the more the cement will settle. Since the time required to place the cement is primarily dependent on the depth of the casing, a good practice would be to leave 10 feet of cement in the casing for every 1,000 feet of casing.

TWO KINDS OF PIPE BENDS

Will you tell me, please, what is meant by "cold bends" and "fire bends"? As cold rolled steel is steel that is rolled without heating it I rather thought that cold bends in pipe might mean bends made without heating it, but these bends that I saw a reference to were made out on the line, which made it seem unlikely that the bending was done while the pipe was cold. If the fire bends are made with heat, it doesn't seem likely that they would be made out on the line either.—L. U. L.

Your first assumption was right. The cold bends are made without the application of heat, and the fire bends are bends made with the aid of a fire for softening the pipe. Both operations are performed when the pipe line is being laid. Concerning pipe bends, Prof. Lester C. Lichty, of the department of mechanical engineering, University of Oklahoma, says in his work on "Natural Gas":

"Pipe bends are used in pipe lines to change the direction as desired or to cause the lines to conform to the contour of the country. Bends should be eliminated as much as possible, however, by laying lines deep through the ridges.

"Screw pipe is usually bent after being connected to the line. To make a fire bend, several joints of pipe are set up beyond the joint to be bent, the end of the pipe being supported above the ditch. If the pipe is not in the ditch two joints are supported, one on each side of the joint to be bent. A fire is built under the section to be bent and after being properly heated the pipe is bent by the weight of men. This procedure results in a sag bend. If an overbend is desired, make a sag bend and screw the joint of bent pipe one-half turn.

"Cold bends are made with a pipe bending machine or with a pipe laying machine. A pipe bending machine is an apparatus by which pipe may be bent as desired. Some use rollers and internal mandrels, but the most usual type uses formers and saddles and operates without internal mandrel or fitting. The necessity for internal mandrel or fitting is determined mostly by the ratio of the thickness to the diameter of the pipe. Where the wall is relatively thin something inside appears to be necessary to prevent buckling, crumpling or collapsing of the pipe."

WHY WAS IT CALLED THAT?

PEG-LEGGING

The driller knows that if he does not let out screw fast enough to keep pace with the tools when he is drilling with a wire line the tools will go beyond the limit of the line's elasticity and continued jerking eventually will part the cable. When the limit of elasticity has been reached the tools usually begin to hit on each alternate stroke only, and the action at the bottom of the hole suggested to some imaginative mind the unequal footfalls of a one-legged man. Thus this performance of the tools, warning the driller that he must let out screw, came to be called "peg-legging."

PROBLEM IN REPRESSURING

Am doing some repressuring on a property of the company with which I am connected. One of the key wells is three locations from the property line with two other producing wells between. My company also has the lease on property across the line, but no wells have been drilled on it yet. Recently I noticed that the line well two locations from the key well was producing a lot of air, which indicated the air was channeling. I immediately raised the tubing in the well in which air was breaking through and I am holding a back pressure of 80 pounds on the casinghead. Am wondering if by holding this back pressure the oil is being driven back into the sand on the offset lease on which there are no wells. I would appreciate your opinion on this. It might help you to know that production is coming from a tight sand.—E.G.M.

Since the sand from which you are producing is tight and since there are no wells on the offset lease, the danger of driving oil into the offset property probably would be negligible. This is on the assumption that you are not holding back pressure on the other producing wells around the key well. By not holding back pressure on these wells they furnish lines of least resistance and therefore afford opportunity for the oil to be driven toward them instead of across the property line.

PURPOSE OF HEAVING PLUG

What is a heaving plug? It seems to be used in completing wells in some fields. We do not use any such thing in this district.—A. S. T.

A heaving plug is a device designed to help in seating the casing where the oil sand has been drilled into unexpectedly and the sand heaves up inside the casing. In oil fields of California it is customary to land the casing on a shale or shell formation whenever possible. In new fields, however, or where an unlooked-for oil sand is encountered, this overlying shell or shale may be drilled through before the nearness of the oil-producing sand is recognized. Where this sand is soft the seating of the casing becomes a problem as does the matter of preventing it from moving up inside the casing. In this condition the heaving plug is of great value. It has four slips, with teeth that engage in the casing on an upward thrust. It is lowered to the bottom of the casing and the slips are set to hold it at that point, thus preventing the heaving sand from coming up into the casing. The casing then is perforated to admit the oil. The heaving plug is made of cast iron and can be drilled out.

The Spirit of SEVENTY-SIX

AT the head of Washington Street, in Marblehead (Mass.) stands Abbott Hall. In it hangs the famous and much-copied painting, "The Spirit of Seventy-Six." Painted in Cleveland by an obscure artist—A. M. Willard—for the Philadelphia Centennial of 1876, the picture has become almost a national symbol of America.

Curiously enough, the original title for the painting was "Yankee Doodle," and the first idea for it was of the serio-comic order. "With the exaggerated or burlesque idea at the fore," said the painter, "I slashed into outline a few charcoal attempts; but the lines would not fall or respond as I wanted them to. One day I caught a glint in the eye of the old man who posed for the center figure—and the real picture went ahead and painted itself."

1776 found the thirteen colonies, which had separate beginnings, welded together for a common cause. Similarly, 1929 finds the Cooper engine business which began in 1833, and the Bessemer engine business which began 1898, united for a single purpose: greater service to this industry. The combining of the organizations greatly broadens our facilities for research and engineering. It provides a single source of supply for every type and size of gas engine, compressor, and Diesel engine up to 1500 B. H. P. It makes the new corporation the largest builders of gas engines and compressors in America. Most important of all, the same personal relations and policies of fair dealing, characteristic of the old companies, are being maintained.

THE COOPER-BESSEMER CORPORATION

Formerly The C. & G. Cooper Co. and The Bessemer Gas Engine Co.

PLANTS

MOUNT VERNON, OHIO GROVE CITY, PA.

...in Engine Building

Natural Gas Developments

GAS ADMINISTRATION FOR CALIFORNIA STATE

SAN FRANCISCO, Calif., June 29.—Appointment of a natural gas administrator for the entire State of California was the solution advanced by A. F. Hockenbeamer, president of the Pacific Gas & Electric Commission, for the natural gas tangle in northern California.

Mr. Hockenbeamer declared huge quantities of natural gas are being wasted in southern California and termed it "impossible to serve straight natural gas in northern California as long as the wastage is continued in the southern area."

Mr. Hockenbeamer made his recommendation during the Railroad Commission's hearing on an application of the Western Natural Gas Co. to construct a natural gas line to Contra Costa County from the Kettleman Hills. Officials of the Coast Counties Gas & Electric Co. were on the stand. The western company has offered to retail gas to the coast company at prices below the present schedule.

PRESIDENT SEAGRAVES WRITES STOCKHOLDERS

On the occasion of the first year's anniversary of the United Gas Co., President O. R. Seagraves has addressed a letter to the stockholders describing the organization's activities during the past 12 months. United Gas, through its affiliated connections which produce, transport and distribute natural gas over a range of territory extending from the Monroe and Richland gas fields in north Louisiana to the Laredo gas fields in Southwest Texas, supplies more than 900,000 people in the contiguous distributing centers. The major distributing centers are Houston, San Antonio, Austin, Port Arthur, Beaumont, Laredo and Palestine. Through its investments in the Mississippi River Fuel Corp., Consolidated Gas Utilities and Natural Gas Securities Corp. the limits of the company's territory extend to St. Louis and Wichita, Kans., and El Paso, Tex.

During 1928, the controlled companies of United Gas produced over 17,900,000,000 feet of gas, and purchased, through its contracts, 24,700,000,000 feet. The total number of customers served directly or through independent distributing companies, in which United Gas holds a substantial interest, is more than 135,000.

Balance sheet, as of March 31, 1929, of United Gas Co., and its controlled companies, shows total assets of $98,387,714.13. Gross revenue for the first quarter of this year amounts to $3,476,256.19. After deducting operating expenses, maintenance and local taxes, as well as interest on funded debt, dividends of preferred stock and minority common stock interests, there is available for reserves, federal taxes and dividends on stock of the United Gas Co., the sum of $924,139.69.

FAVOR EXPORTING GAS

CHATHAM, Ontario, June 29.—Dr. C. S. Camsell, of Ottawa, and associates of the commission recently appointed to investigate the waste gas problem in Alberta recently visited the Turner Valley Field to observe conditions at first hand, following an organization meeting held at Edmonton. It is understood no public sittings will be held, the purpose of the commission being rather in the nature of research, in which both scientific and economic aspects will be considered. Doctor Camsell intimates that both Charles Stewart, minister of the interior, and J. E. Brownlee, premier of Alberta, favor export of surplus gas to the United States provided no insuperable objections, are disclosed.

SOUTHERN CALIFORNIA GAS CONSUMPTION GAIN

LOS ANGELES, Calif., June 29.—At a time when the laying of 20-inch pipe to make Kettleman Hills natural gas available to consumers in the San Francisco Bay area by the middle of August or the first of September is attracting so much attention it is interesting to glance at the 1928 consumption figures for southern California.

Gas consumption in southern California during 1928 for industrial and domestic purposes increased approximately 6½ per cent over the 1927 total, based upon production figures recently compiled by Southern California Gas Co., Los Angeles Gas & Electric Corp., and Southern Counties Gas Co. These three leading gas utilities of southern California handled a combined total of 96,718,706,000 feet of gas, compared with 90,869,648,000 feet in 1927, an increase of 5,849,058,000. The combined number of meters installed at the close of the year aggregated 715,486, compared to 680,794 at the end of 1927, a net increase of 34,692, or more than 5 per cent.

Southern California Gas Co.'s production increased over 4,000,000,000 feet, or 6½ per cent, to bring the year's total to 65,000,000,000 feet. Southern Counties Gas Co. increased its output by nearly 1,000,000,000 feet, or 8 per cent, to establish a figure of more than 13,000,000,000 feet. The two organizations laid a combined total of 468 miles of new mains during the year, of which more than 300 miles went into the Southern's system, to bring the total miles of mains for both companies up to 6,869.

INCREASE IN GAS SALES IN FIRST FOUR MONTHS

An increase of 12 per cent in gas sales was registered during the initial four months of 1929 by the first 81 gas companies reporting to the statistical department of the American Gas Association.

The percentage increase of gas customers in the first four months of 1929 compared with 1928 was 2.8 for these 81 companies. Revenues from gas sales increased 5.4 per cent.

Sales of gas for house heating purposes continued to show rapid increases. For the first four months of 1929, house heating sales in the State of Michigan increased 77 per cent over the corresponding period of 1928, while Massachusetts and Wisconsin showed increases of 64 per cent in this phase of gas sales activity.

The high rate of general industrial activity in the Middle West is reflected in an increase of some 20 per cent in sales of gas for industrial and commercial purposes during the first four months of 1929 in Michigan, while Illinois showed an increase of 18 per cent. These 81 gas companies report an increase in gas sales of 9.4 per cent in April compared with April, 1928.

ALBERTA STORAGE PROJECT

CHATHAM, Ontario, June 29.—C. J. Yorath, president of the Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary has announced that some definite action toward the storage of waste gas from Turner Valley in the Bow Island Field may be taken next month.

It is thought possible to store about 3,000,000 feet a day in the Bow Island sand, with the present facilities, though it will be necessary to force the gas into the sands under about 750 pounds pressure. Geological authorities of the University of Alberta have pronounced the project feasible.

PRESSURE DROPPING IN MUSKEGON FIELD

MUSKEGON, Mich., June 29.—Dry gas wells in the Muskegon Field are continually dropping in rock pressure and some of the industries now using natural gas for boiler fuel are planning to replace it with fuel oil. Rock pressure of wells from which the Continental Motors Corp.'s gas line, the Muskegon Traction & Lighting Co., the West Michigan Consumers Co. and the Muskegon Pipe Line Co. are pulling about 12,000,000 feet daily has dropped to 400 to 425 pounds. In some cases the pressure is less than 400 pounds, a loss of about 50 pounds since May 15. Indications now are that the major portion of the dry gas from Dundee wells in the Muskegon Township area will have been exhausted by September 1, just one year from the time domestic consumers of the city and the Continental Motors Corp. started using natural gas.

Daily consumption of gas has dropped with the coming of the warm weather from 17,000,000 to about 12,000,000 feet. Daily consumption of the four gas lines has dropped as follows: Muskegon Traction & Lighting Co., 1,500,000 to 900,000 feet; West Michigan Consumers Co., 2,000,000 to 1,250,000; Muskegon Pipe Line Co., 5,500,000 to 4,000,000; and Continental Motors Corp., 8,000,000 to 6,000,000 feet.

The Continental Motors Corp. is now considering replacing natural gas for boiler use with fuel oil and laying a line to transport it from the wells or from the new refineries now being erected in the field to its plant and to the plants of the Lakey Foundry & Machine Co. and the Brunswick-Balke Collender Co.

The West Michigan Consumers Co., which has been getting the greater share of its gas from producing upper Traverse oil wells and repressuring it in the plant near the Dixie Oil Co.'s field headquarters in Muskegon Township, will not be affected by the exhaustion of the dry Dundee gassers to the same extent as the other pipe line operators. This company already has agreed to provide the Muskegon Traction & Lighting Co. with gas in the event the wells to which its line is tied play out. This will insure natural gas for domestic consumers of Greater Muskegon for a year or perhaps longer than the industries will be able to get it from the present proven field.

The Continental Motors Corp. has prospects of a new supply of gas from its own wells and leases near the end of Jackson Avenue since the completion of a lower Traverse gas well there with a daily flow of about 1,000,000 feet. A second small upper Traverse oil producer is now being drilled deeper in the hopes of finding a considerable supply of natural gas there in the lower Traverse formation.

GAS MEN'S ANNUAL PICNIC

The tenth annual outing and picnic of United Natural Gas and associated companies will be held at the Clarion, Pa., fair grounds on Saturday, July 27, according to announcement by the committee in charge. It is expected that more than 3,000 people will be in attendance at the picnic and outing. Last year more than 2,500 were present.

Three new sister companies, Ridgway Natural Gas Co., St. Marys Natural Gas Co. and the Sylvania Corp. will join with United Natural Gas Co. and the Mars Co. in this year's outing.

Howard Buckham, chief of the orifice meter department at Oil City, is general chairman of the picnic committee and is planning an even bigger and more comprehensive program than any in the past.

INVESTMENT IN GAS NOW $4,700,000,000

The present investment in the gas industry is approximately $4,700,000,000, of which manufactured gas accounts for $3,000,000,000 and natural gas for $1,700,000,000. Manufactured gas companies serve about three-quarters of the homes on the mains of the gas industry.

Gas has become the chief cooking fuel in the United States. Of 27,850,000 families, over 46 per cent use either manufactured or natural gas for cooking. The American Gas Association has made the following estimates of the number of families in the country which use various fuels for cooking: Manufactured and natural gas, 12,970,000; coal and wood, 8,290,000; oil, 6,000,000; electricity, 590,000.

The most rapidly developing branch of the residential gas business is the use of gas for water and space heating. The sales of economical gas appliances is greatly stimulating domestic gas sales. Gas is being used in increasingly large amounts by those industries which need heat in its most adaptable, efficient and convenient form. Gas sales to industrial and commercial customers are increasing at an even faster rate than sales for domestic consumption. Gross revenues from all sources in 1928 were 3.6 per cent above those of 1927.

Whereas domestic sales have increased nearly 55 per cent in 10 years, industrial and commercial sales have increased by almost 109 per cent. Of the total sales in 1928, approximately 69 per cent were made to domestic customers and about 30 per cent to industries and to hotels, restaurants and other commercial consumers.

UNITED GAS ACQUIRES CODY PETROLEUM CO.

HOUSTON, Tex., June 29.—The United Gas Co. of Houston, Tex., has announced the acquisition of an 80-per cent stock ownership in the Cody Petroleum Co. of Cody Wyo. Although holding the controlling interest, no change will be made in the management of that company and S. C. Ferdig, president, will continue in that capacity.

Purchase into the Cody Petroleum Co. is the first attempt of the Moody-Seagraves interests to break away from Texas and Louisiana for production. These interests' chief concern is in the production of natural gas but it also has developed a substantial oil production at Refugio, Tex., and up to several months ago had production under the Moody Corp., which now is owned by the Superior Oil Co. of Tulsa.

The Cody Petroleum Co. has 2,000 bbls. daily production in the Oregon Basin of Wyoming, has three wildcats drilling and has contracted for two others to be started within 60 days.

HOME SERVICE GAS COURSES

During the summer the gas industry will make available two educational courses for the home service directors and cooking experts of gas companies. One of these will be held at Teachers College, Columbia University, New York, N. Y., and the other at the American Gas Association Testing Laboratory, Cleveland, Ohio. The course at Teachers College will open up July 8 and close July 26. This course will consist of laboratory work, lectures, and field trips. The course at the American Gas Association Testing Laboratory will extend from June 24 to June 29. The primary purpose of this course is a thorough study of domestic gas appliances and the effect of different service conditions in their operation.

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It was only six years ago that the first METTLER ENTRAINED COMBUSTION GAS BURNER was installed in a local laundry but since that time boilers, stills and furnaces in this country alone, consuming more than 25,000,000 cubic feet of gas *per hour* have been equipped with our burners. *There is a reason.*

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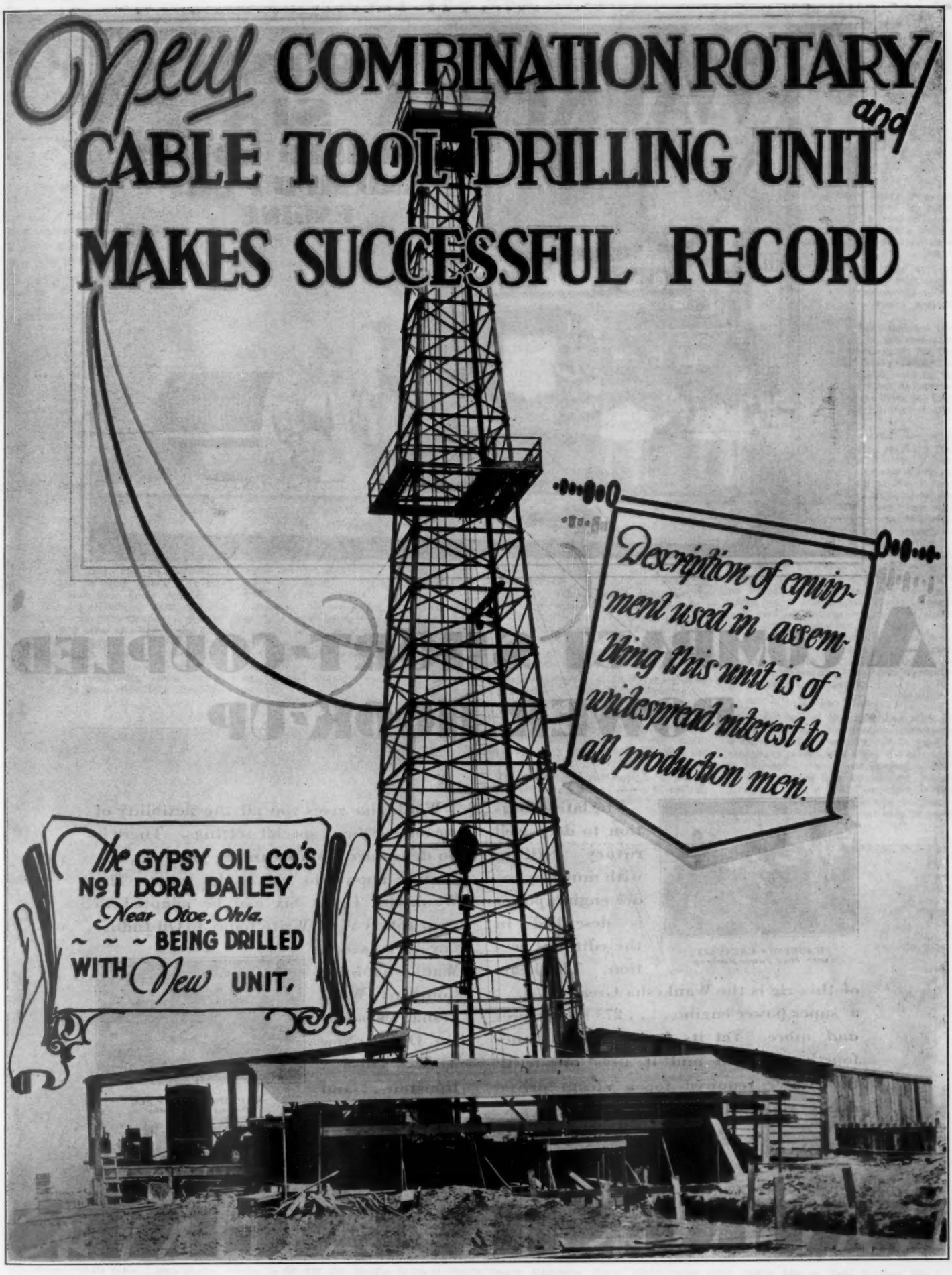
THE Moore Champion DERRICK


New COMBINATION ROTARY and CABLE TOOL DRILLING UNIT MAKES SUCCESSFUL RECORD
Description of equipment used in assembling this unit is of widespread interest to all production men.
The GYPSY OIL CO.'S No 1 DORA DAILEY
Near Otoe, Okla.
~ ~ ~ BEING DRILLED WITH New UNIT.

A COMPACT SHORT-COUPLED POWER HOOK-UP

WAUKESHA GREAT SIX with Mud Pump Hook-up

The latest solution to deep well rotary drilling with multi-cylinder engine power is described in the editorial section. The heart of this rig is the Waukesha Great Six . . . . a super power engine . . . . 275 horsepower *and more.* Yet its fuel costs only one-fourth as much and it uses one-tenth the water required for a steam driven rotary rig.

Waukesha gives you all the flexibility of steam—without special settings. There is no departure from steam rig practice . . . . routine about the rig is the same. The Waukesha Great Six can be adapted to *your* rotary rig. Write today to Oil Industry Division, WaukeshaMotor Company, Waukesha, Wisconsin. Offices: New York . . Tulsa . . Houston . . and San Francisco.

WAUKESHA GREAT SIX Driving Draw Works

939

WAUKESHA ENGINES

Develop Gasoline Motor for Drilling

Equipment Suitable for Operations in Arid Regions and Wildcat Territory Used Successfully in Mid-Continent

By L. G. E. Bignell
Petroleum Engineering Editor

It was not so very long ago that the Mid-Continent Section of the American Society of Mechanical Engineers sponsored a three-cornered debate between the engineering students of the University of Oklahoma, Oklahoma A. & M. College and the University of Arkansas upon the advantages of the three types of prime movers, steam, electricity and internal combustion engines, for power units for drilling wells.

The interest manifest in that debate by men in all branches of the industry indicated that this is a live subject and for that reason The Oil and Gas Journal desires to present a description of a new drilling outfit that has drilled one hole in Oklahoma and been transferred to another, where it is now at work quite successfully.

Along in 1918, Homer and Roy Mead started contracting in Oklahoma under the firm name of Mead Brothers, and they had been doing contract drilling in the eastern fields before they moved west in about 1912, and their experiences in the Mid-Continent fields have been many and varied.

They have drilled wells in Kansas, Oklahoma, Texas and other parts of the Mid-Continent area, also in California, but none on the Gulf Coast. At this time they have four units running in western Kansas on wildcat wells, and one of these wells in Ness County is producing about 100 bbls. of oil per day in a broken chat formation, and deeper drilling is bringing in more production from a green sand, that looks something like the Wilcox of Oklahoma areas, but as yet it has not been definitely identified as such.

In any event the prospects of one of these four wells opening a good pool seems excellent and it is not unlikely that all four of them may be on or very close to good structures, for they have encountered big gas in each test.

Faced with problems of drilling wells in wildcat territory where natural gas and electricity is not available, and where the cost of hauling oil or coal for fuel is prohibitive, it became necessary for the Mead Brothers to secure a rotary outfit that could drill wells to 4,500 or 5,000 feet economically, and be portable to the extent that it could be moved to and from the locations upon the oil field trucks and trailers of the usual type, and over the average oil field country road.

Engines

The C. F. Camp & Co. had been working upon the problem of fitting the Waukesha internal combustion engine, or motor, made by the Waukesha Motor Co., Waukesha, Wis., into such an outfit, and Mead Brothers turned to them for assistance, and the description that follows outlines how this intricate mechanical problem was solved under the direction of E. E. Robbins of the Camp company and by the co-operation of a number of companies manufacturing equipment already well known to the oil fields of this and foreign countries.

Part of the credit for design of this outfit must be given to the Portable Rig Co., Inc., of Houston, Tex., for their contribution in the way of a transmission unit between the Waukesha motor and the Emsco drawworks which played a large part in the ultimate success of the apparatus.

In order that the assembled unit might be given a thorough test on a drilling well it was first installed at a location drilled by Mead Brothers on their own account at No. 1 Hall near Cushing, in Section 25-17-3e, where it completed the rotary drilling to a depth of approximately 3,104 feet in a total elapsed time of 39 days, which included setting up time.

After completing the rotary hole at No. 1 Hall, the rotary equipment was all removed from the derrick and trucked to a new location known as the No. 1 Dora Dailey, located in the SE NW NE, Section 24-22n-1e, where the Mead Brothers have a contract to drill to 4,500 feet for the Gypsy Oil Co.

On the first location the engines were operated on natural gas, but this fuel not being available at the second well the motors are now being run upon gasoline.

This particular type of engine is known as the Waukesha Type O. K. Motor which is a six-cylinder engine, each cylinder having a bore of 7¾-inch diameter with a crank stroke of 8½ inches and runs at a maximum speed of 1,000 revolutions per minute.

Reversible Clutch Unit

This high speed is reduced by driving through a heavy duty power take-off clutch made by the Twin Disc Clutch Co. of Racine, Wis., directly into the flywheel and from that point through a flexible coupling made by the T. L. Smith Co. of Milwaukee, Wis., to an 18-inch diameter grooved sheave for the Texrope drive, this sheave being mounted between two bearings to insure alignment.

The drive consists of 18 Texropes, made by the Allis-Chalmers Manufacturing Co., of Milwaukee, Wis., and the two pulleys are of the same diameter but the driven pulley is mounted directly upon the shaft of a reversible clutch unit, designed and constructed by the Portable Rig Co., Inc. of Houston, Tex.

The reversible clutch unit is of a very heavy construction, and mounted entirely upon Timken bearings, having two in each pedestal. The reverse clutch is specially designed to stand extra heavy loads and shocks that are encountered in rotary drilling operations, and housed in a case to permit the gears to run in a bath of oil, which assures proper lubrication at all times.

The housing and split type sprocket used with this unit to transmit power to any standard type drawworks is carried between two extra heavy antifriction bearings.

In this design it is contemplated that this split sprocket may be removed after the unit has served its purpose for furnishing power for the rotary outfit, and the rotary hole is finished, and in the place of the sprocket there can be mounted a pulley of suitable size to drive the band wheel of the cable tool rig that is used to complete the hole.

This procedure was not followed when the rotary hole was finished on No. 1 Hall near Cushing, because it would have necessitated the use of a second Waukesha motor unit for the rotary at No. 1 Dora Dailey where the rotary drawworks and other equipment was moved, but with duplicate outfits owned by one contractor he can move them around as desired for use on either type of drilling well.

The shifting mechanism is designed and constructed to permit operation with the least effort on the part of the driller and as all parts are constructed of steel and extra heavy it is assumed that this outfit will give continuous service even under heavy duty conditions.

In the gear box there is a double reduction herringbone type two-speed gear, designed by the Portable Rig Co. under the supervision of Linn Park, secretary-treasurer of that company.

Gear Box

By the use of this gear box with its two-speed units, the operator when using a three-speed drawworks will be able to obtain six speeds, and when the late type of four-speed drawworks is used a total of eight speeds can be secured, which gives this oufit a flexibility equal to that of either steam or electric powered units.

To make the power plant easy to move

Left: Gypsy Oil Co.'s No. 1 Dora Dailey, drilling in SE NW NE, Section 24-22n-1e, Noble County, Oklahoma. Right: Emsco rotary outfit making hole on Mead Brothers' No. 1 Hall, in Section 25-17-3e, near Cushing, Okla. This well was completed as a gasser.

to and from the location it is designed to separate into three units, the Waukesha motor, Portable Rig Co. gear box and clutch. Each unit is mounted on 10-inch "H" shapes and tied together with 4-inch specially designed and adjustable turnbuckles. The drive between the gear box and the clutch is by means of No. 1240 rotary chain, there being only two chains used in this rig.

In this first installation an Emsco Type H.R.B. four-speed drawworks was used and the power delivered to it through the usual type of jack shaft that is standard equipment with the newer type of rotary units of today.

The ratio of speeds between the engine and the reduction gear is 1 to 1 and between the gear in high speed is 3.5 to 1 and in low speed 7 to 1. The gears were driven through a jaw clutch placed between the high and low gears, on the final reduction or take-off shaft, making it possible to select either speed as desired for the particular kind of drilling to be done.

From the final reduction shaft, the gear drives a heavy-duty reversible clutch, by means of an ordinary rotary chain and a 20-tooth driving sprocket is used, and the driven sprocket has 24 teeth and both are the solid-type sprockets. The centers between sprockets are 5 feet and the chain is covered with a chain guard for safety.

No trouble was experienced with the use of this chain at this point or in the use of the second chain drive mentioned above, which is from the drive sprocket on the clutch with 20 teeth to a 19-tooth sprocket on the jack shaft of the Emsco Type H.R.B. drawworks.

It is interesting to note that on the first well drilled with this unit, which was No. 1 Hall, located near Cushing, Okla., in Section 25-17-3e, it was never practical or necessary to use the low speed, as ample power was developed at all times through the engine to carry all the loads in the high gear.

A multiple friction type disc clutch with an overload capacity for the horsepower developed has been designed by the Twin Disc Clutch Co. and consists of large clutch plates and friction discs split so that they can be readily changed or adjusted as the case may be. The operation of the clutch from reverse to neutral or ahead positions is obtained by an independent lever from that which operates the brake, both of which are controlled from the derrick floor. By the use of this lever, the driller may operate the clutch ahead, reverse or hold it neutral, the same as with steam. The specifications call for an alloy steel shaft 6 inches in diameter mounted on Timken bearings which are designed for adjustment and self-aligning. The entire unit is mounted on very heavy 63-pound Carnegie "H" beam sections and the ends are turned up, making the unit readily skidded. The weight of the entire unit is approximately 10,000 pounds.

No trouble was experienced on this unit during the entire course of operation, and apparently at the end of the run it was just as flexible and powerful as at the beginning. The operators were able to handle it just as easily as any other type of power.

Engine Specifications

Tracing through this range of reductions it is found that the following speeds will be secured with the maximum engine speed of 1,000 R.P.M. The take-off shaft of the reduction gear has a speed of 207 R.P.M. maximum and minimum of 88.5 R.P.M. The maximum speed on the reverse clutch is 176 R.P.M. and the minimum 73.3 R.P.M. On the jack shaft of the drawworks the maximum speed under these conditions is 185 R.P.M. and the minimum 77 R.P.M.

To summarize there are four speeds available from the drawworks, as follows:

First speed:
- Low speed line shaft.
- Low speed drum shaft.

Second speed:
- Low speed line shaft.
- High speed drum shaft.

Third speed:
- High speed line shaft.
- Low speed drum shaft.

Fourth speed:
- High speed line shaft.
- High speed drum shaft.

Which completes the details of the rotary drive when the 275-horsepower Waukesha engine is used.

On this well there were three 275-horsepower Waukesha motors used, one for the power units for the rotary drawworks, and the other two to drive the Oil Well "Mud Hog" slush pumps, and the specifications for each engine are given below.

It should be noted that with this three-power unit arrangement parts are available at all times from the standby engine of the pumps so it would be practically impossible to shut down the drilling because of engine troubles, due to breakage of parts.

The specifications for these Waukesha O. K. type engines are given below:

- Number of cylinders—6.
- Bore—7¾ inches.
- Stroke—8½ inches.
- Crankshaft diameter—4¼ inches.
- Crankshaft bearings—7 S.A.E. 1045 steel.
- Crankcase—Cast iron, "Grider" type.
- Connecting rods—Heat treated 40 point carbon steel, ground to fit bearings.
- Valves—Silchrome exhaust, nickel steel intake.
- Push rods—Roller type.
- Cylinders—Individual block, each cylinder of chrome nickel steel.
- Cooling system—Dual water pump and 73-gallon capacity Young radiator.
- Lubrication—Full pressure to all main connecting rods, camshaft, auxiliary shaft and timing gear bearings through series type oil filter with splash auxiliary connecting rod dippers and duplex fresh oil to cylinders and pistons. Dry sump system; oil supply carried in cooler tank above water pump. Magneto safety switch stops engine when oil pressure falls below safe level.

The engine driving the drawworks ran practically idle 90 per cent of the time due to the fact that the horsepower requirements for running the rotary table were not in excess of 75 horsepower and at 1,000 revolutions per minute the engine would develop 275 horsepower running approximately 500 revolutions, or one-half of its speed, the engine will develop 175 horsepower, therefore, the only time that the engine driving the rotary drawworks was loaded, was when the actual pulling of the pipe for changing the bit was necessary.

If it is assumed that normal operations called for one round trip every 12-hour tour, it can be readily seen that the drawworks engine would never be called upon to deliver its horsepower requirements more than twice in a 24-hour period, and that pulling time would not exceed one hour at the most.

A tabulation giving the pulling time from a 3,000-foot depth is given later in this article which will verify the statement as to the peak load requirements for the engine.

The engines were placed on this drive without any special equipment other than the standard and required no mechanical adjustment other than the replacing of four valve springs which were broken on one pump motor at the beginning of the job, and it will be noted that these four valve springs were broken when the motor was started and all replaced within the first 12 hours' running time, and no additional springs were placed in service on any of the other motors, so it seems practical to assume that these four were defective valve springs and therefore no further difficulty should be anticipated from this source.

Radiator

The engines were cooled by means of a 73-gallon capacity Young radiator, which had adequate cooling facilities as at no time did the engine show any indications of getting hot, and the addition of about one-half gallon of water per day was all that was necessary.

This radiator is known as the Young heavy duty radiator and is made by the Young Radiator Co., of Racine, Wis., of which F. M. Young is president.

Its design indicates the strides made in the manufacture of radiators for unusually large Diesel and oil engines. This radiator is of sturdy construction with heavy structural steel sides, cast iron top and bottom tanks, all built in proportions to withstand the strains of oil field and other type of severe service.

The core construction is worthy of particular note as the side members of these sections are of patented design to eliminate vibration and "shimmying" and the danger of leakage and failure. The tubes in the core are large so as not only to pass a large volume of water but to insure against clogging of the system from dirty material taken up in brook or stream water which may be often necessary.

These radiators are built in various capacities for different sizes and makes of Diesels, stationary and portable engines, and have given good service under many severe operating conditions.

Slush Pumps

The question of supplying suitable slush pumps for this outfit was solved by using "Oilwell" mud hog power driven pumps, designed for service where conditions do not permit the use of steam. These pumps have been meeting with success throughout the country wherever used and they are adaptable to various types of drives, and the multiple "V" type belt drive is giving good service.

In this particular case two of these 7¼-inch bore of water cylinder liner by 18-inch length of stroke pumps were used, and driven by 275-horsepower type O. K. Waukesha motors, one engine for each pump, and the power was transmitted by means of Texrope drives with the pulleys set at 93 inches centers.

This type of mud hog was perfected by the Oil Well Supply last fall and one of the first ones was exhibited at the International Petroleum Exposition last year, but Mead Brothers already have six of them in use and they are giving first class satisfaction everywhere.

The pumps are somewhat unique in their construction in that instead of the conventional single crankshaft with two cranks, this pump has two individual shafts and each crank is driven by its gear that is in turn driven by the pinion upon the steel shaft that is carrying the 52-inch Texrope sheave.

This shaft is of heat treated steel and the pinions are cut integral with it and are of the helical form made by the famous Nuttall process which insures at least two teeth in bearing at all times, and being heat treated and very accurately made and running in a bath of oil long life is insured.

The connecting rod on each crank operates through a double set of stuffing boxes so that no fluid can travel from one end of the rod to the other. The pumps are fitted with 16 small diameter

Drilling crew and visitors at No. 1 Hall well. Left to right, back row: Linn Parks, Portable Rig Co.; Charles Miller, driller; J. L. Adcock and E. Stanley, helpers. Front row, Ed. M. Scott, H. Hodges, Portable Rig Co.; Arthur Rodelat, D. N. Bradley, C. F. Camp & Co.; G. F. Woods and W. F. Denson, helpers.

valves and it is claimed by the manufacturer that this type of design reduces the weight of the valves 50 per cent but at the same time permits the use of 33⅓ per cent more area for flow of fluid.

The connecting rod is babbitt lined on a bronze bushing and is so constructed as to give maximum life without rebabbitting.

One interesting feature of this pump is the use of Timken bearings at all points where friction would be great, and the main shaft and the two crankshafts are all mounted upon specially designed Timken bearings that were originally used in railway car service. This is only one of the many details that indicate the care and thought given to designing this pump for the very severe duties it is required to meet.

The total weight of this pump is about 23,000 pounds, but as it is mounted upon long heavy skids it is possible to place it upon a truck and trailer for handling about the fields.

The setup of the pumps was about the same as would be expected to be found on any rotary well except that the distance between the pulley on the engine shaft and on the pump shaft was 93 inches, and this type of setting did not require the digging of special slush pits or building of other than the ordinary type of ditches.

This was an ideal arrangement for each pump was used in alternate 12-hour shifts and this gave the engines ample time to cool down and receive any attention that might be necessary.

Valves

One other piece of equipment used on this well that is furnished by the Oil Well Supply Co. is the Kerotest valves which are the original valves to be tested out in kerosene under pressure of from 1,500 to 2,000 pounds per inch for a 24-hour period before they are permitted to leave the factory.

After this severe test the valves are sent to the Pittsburgh Testing Laboratory where each one is again given a full and complete test and if so desired a signed certificate will be issued by that laboratory stating exactly what the result of their tests were. The valves used with this outfit were ordinary gate valve type taken from Oil Well Supply Co. stock, and they are similar to valves available from any of the Oil Well Supply Co. stores in the oil country.

It is interesting to note that in this particular outfit the fan back of the Young radiator is driven by a set of three "V" Texropes, and this type of drive was found to be very satisfactory.

Oil Cooler

Another feature of this layout that proved to be very serviceable was the oil cooling reservoir with which each engine was equipped. This reservoir was cooled by means of a coil from the water of the circulating system. This provision was of considerable advantage over the oiling system used on all previous motors as the oil temperature in the crankcase remained low at all times.

Ignition System

The engines were also equipped with a dual ignition system to preclude any possibility of a shutdown due to electrical troubles. The system consisted of regular high tension magnetos and a distributor and Exide battery ignition system for emergency purposes. Both systems led into a junction box with an ordinary switch lever which could be thrown over for either system as desired. However, it was not necessary to call upon the battery ignition system during the drilling of the first well.

The engines operated without vibration and due to the fact that the shocks were absorbed through the Texrope drive, no adjustments were deemed necessary on any of the engine parts, which is a rather unusual record.

Texrope Drive

This drive manufactured by the Allis-Chalmers Corp., proved very satisfactory on this particular installation and no trouble was encountered in any shape or form. The drive was designed by the Allis-Chalmers engineers, especially for this particular installation, and through their field organization co-operated in checking the installation in the field and also made periodic inspections while the drilling and pulling of the drill pipe was in progress.

There is no question but what the Texrope drive was of great benefit on this installation.

Water Pump

The Waukesha engine is also used to furnish power for a Gould water pump, installed by the Portable Rig Co., which sets alongside the Texrope drive between engine and gear box shafts and is driven from a pulley on the end of the shaft that extends into the gear box. The Gould pump is driven by belt and supplies ample high pressure water to suit all needs for cleaning up around the rig, and solves the problem of water supply when a steam pump is not available.

Lighting Plant

For light about the derrick, usually supplied by the use of the steam driven turbine unit, a small Flolight electric plant manufactured by the Hutchinson Engineering Co., and furnished by C. F. Camp & Co., was used, this being operated by a gasoline powered engine that is direct connected to a small generator and ample current for all derrick and dog house lamps was available.

Air Compressor

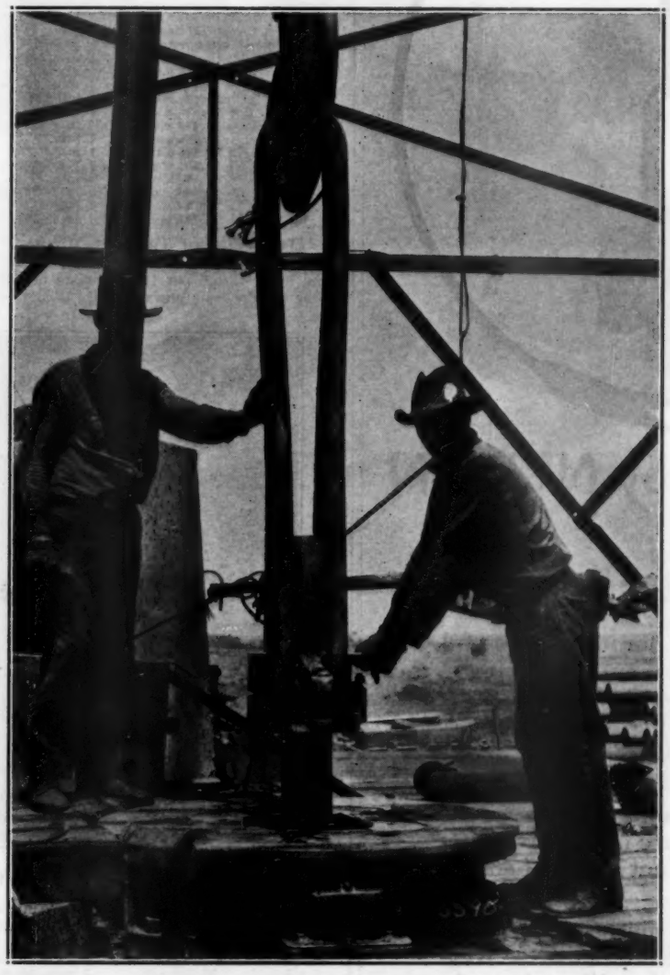
The question of providing a substitute for the steam usually found around a rotary rig for cleaning bits, and so forth, has been solved by installing a Texrope driven air compressor which gives air at high enough pressure to permit its being used in place of steam where needed.

Fire Extinguisher

It has always been considered a safety measure to have steam available on the derrick floor for snuffing fires and as there is none available with an outfit of this kind it has been found very satisfactory to use instead the Pyrene portable type fire extinguisher and as a matter of fact this fire fighting apparatus was called into play to put out a fire that might have been serious at the first well.

Derricks

At the first well a Slater turnbuckle derrick was used but at the second location or the one where it now is working, it is used under a 122-foot high Parkersburg bolted steel derrick of the combination rotary and cable tool type, a derrick of the type that the Gypsy Oil Co. has been using on all of their drilling and pumping wells in the Seminole area and elsewhere for the past two years with uniformly good success.



Wilson elevators on the job.

Not only is the derrick of the Parkersburg make but the samson and jack posts are of the well known "A" frame type, and the steel equipment is also Parkersburg make consisting of steel bull and calf wheels and the new Type "M" band wheels. Later the Parkersburg chain shipped abroad to South American fields driven sand reel will be used when the well is standardized.

When this well is changed to standard tools the Gypsy Oil Co. will furnish a Waukesha 125 horsepower type engine with an Oil Country Specialties Co. countershaft and clutch which has been used very successfully on a number of installations in all oil fields in this and other countries.

Drilling Bits

For drilling this second hole the Guiberson Tool Corp.'s patented disc bit is being used, and this bit, while on the market only since March, 1928, has been giving excellent satisfaction for drilling in softer formations. Many of them were used in the Seminole area and a number of these bits are now in use in the Oklahoma City Field where they are used to drill to about 2,000 feet.

These bits have been used successfully in West Texas and many other fields in this country and many of them are being and very recently a large order went to the Baku, Russia, oil fields.

Wire Line

Mead Brothers long ago standardized upon the Leschen rope and it is being used on this rig and the 1⅛-inch Hercules brand rotary line was found suitable for this condition and is standard with the Mead Brothers. It has always given satisfaction and they are well pleased with it.

Elevators

The elevators that are being used on the well now being drilled in Noble County are of the Wilson type manufactured by the Oil Tool Division of Byron Jackson Co. of Los Angeles, Calif., and embody the patented features of this make of equipment including the spring latch. This type elevator is designed for the complete range of sizes for regular and A.P.I. drill pipe, casing and tubing.

The links are made from special analysis steel by exclusive methods and designed to withstand very heavy overloads. The links are interchangeable and can be used to fit the different sizes of elevators with the exception of the light weight tubing and single bail types.

Weight Indicator

The well would not have been complete according to Roy Mead if it had not been equipped with the Martin-Loomis automatic recording weight indicator manufactured by Martin-Loomis Corp. of Long Beach, Calif.

The regular type of hookup was installed on this rig and the dead end line carried on the Parkersburg steel calf wheel.

Mr. Mead stated that the use of the Martin-Loomis indicators had permitted them to drill straighter holes and reduced the number of fishing jobs materially and they are standard equipment on all of their seven complete rotary rigs.

Gas Regulators

When an engine is running on natural gas it is most essential that the flow of gas be uninterrupted and also that the volume used be metered and at the No. 1 Hall location these duties were performed by the Neilan Schumacher & Co. gas regulators made in Los Angeles, Calif., and the results were very satisfactory in every way. The gas meter was of the regular oil field type for this purpose.

Because of the fact that these engines used such a small amount of fuel for the power developed the gas input to them was checked in several ways and by means of two or three different hookups. The gas consumption is stated in the concluding paragraph, but when drilling between 2,500 feet and 3,000 feet the gas consumed varied from 50,000 to 60,000 cubic feet per day.

Record of Pulling Drill Pipe

This first outfit as described above was used on a well drilled by Mead Brothers near Cushing, Okla., and below is given a detailed report of the time required for pulling drill pipe and changing bit and running back into the hole, during which period the engine was under its heaviest duty.

For the purpose of obtaining pulling time for comparative purposes, a stop watch reading was taken on May 21, showing the total elapsed time and the time per stand from a depth of 3,015 feet. Time was taken on the basis of the round trip, or in other words, from the time the blocks dropped and the elevator wire attached, the pipe lifted and racked; the pipe was standard 6-inch seamless 22-pound drill pipe, in 30-foot joints, and the time was taken as an average run and without the knowledge of the men as to the time check.

Roy Mead, the owner, was present while time was taken. The starting time was 10 a. m. and the pipe was pulled in trebles or approximately 90-foot stands. Time shown in the following tab-

Constant Pressures

by NEILAN

MUCH of the credit for the successful performance of the combination rig is due to the supply of proper fuel gas pressure for the engines. This important task is being reliably handled by Neilan Sensitive Regulators.

Neilan Regulators are being used to reduce a varying line gas pressure of approximately 175 pounds to a constant engine fuel gas supply of 1½ ounces.

This is only one of the many problems in pressure control that Neilan Sensitive Regulators are successfully handling throughout the oil and gas industry.

The new Neilan Catalog is now off the press—write and a copy will be cheerfully sent to you.

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Roy O. Campbell, *Sales Engineer*
Sanger Hotel, Dallas, Texas

"You Can Be Sure of Neilan Products"

ulation shows total elapsed and time required for each stand or 90 feet:

PULLING TIME

Stand No.	Elapsed time	Time per stand
1	10:04 a.m.	4 min.
2	10:06 a.m.	2 min.
3	10:08 a.m.	2 min.
4	10:10 a.m.	2 min.
5	10:125 a.m.	3 min. 30 sec.
6	10:145 a.m.	2 min.
7	10:165 a.m.	2 min.
8	10:185 a.m.	2 min.
9	10:205 a.m.	2 min.
(Speed changed to third speed)		
10	10:225 a.m.	2 min.
11	10:24 a.m.	1 min. 30 sec.
12	10:255 a.m.	1 min. 30 sec.
13	10:27 a.m.	1 min. 30 sec.
14	10:28 a.m.	1 min.
15	10:295 a.m.	1 min. 30 sec.
16	10:31 a.m.	1 min. 30 sec.
17	10:32 a.m.	1 min.
18	10:335 a.m.	1 min.
19	10:345 a.m.	1 min.
Stand No.	Elapsed time	Time per stand
20	10:36 a.m.	1 min. 30 sec.
21	10:37 a.m.	1 min.
(Speed changed to fourth speed)		
22	10:385 a.m.	1 min. 30 sec.
23	10:395 a.m.	1 min.
24	10:41 a.m.	1 min. 30 sec.
25	10:42 a.m.	1 min.
26	10:43 a.m.	1 min.
27	10:445 a.m.	1 min. 30 sec.
28	10:455 a.m.	1 min.
29	10:465 a.m.	1 min.
30	10:48 a.m.	1 min. 30 sec.
31	10:49 a.m.	1 min.
32	10:505 a.m.	1 min. 30 sec.
33	10:535 a.m.	1 min.
34 (Kelly)	10:54 a.m.	1 min. 30 sec.

Total Elapsed Time—54 Minutes

Time was also taken running back in the hole. Time per trip consists of running blocks and elevators up to derrick man, latching, running in and making up the joint. Started back at 11:50 a. m.

PULLING TIME

Stand No.	Elapsed time	Time per stand
1	11:525 a.m.	2 min. 30 sec.
2	11:53 a.m.	30 sec.
3	11:54 a.m.	1 min.
4	11:55 a.m.	1 min.
5	11:56 a.m.	1 min.
6	11:57 a.m.	1 min.
7	11:58 a.m.	1 min.
8	11:59 a.m.	1 min.
9	12:00 p.m.	1 min.
10	12:01 p.m.	1 min.
11	12:02 p.m.	1 min.
12	12:035 p.m.	1 min. 30 sec.
13	12:045 p.m.	1 min.
14	12:055 p.m.	1 min.
15	12:065 p.m.	1 min.
16	12:075 p.m.	1 min.
17	12:085 p.m.	1 min.
18	12:095 p.m.	1 min.
19	12:105 p.m.	1 min.
20	12:115 p.m.	1 min.
Stand No.	Elapsed time	Time per stand
21	12:125 p.m.	1 min.
22	12:135 p.m.	1 min.
23	12:145 p.m.	1 min.
24	12:16 p.m.	1 min.
25	12:17 p.m.	1 min.
26	12:18 p.m.	1 min.
27	12:19 p.m.	1 min.
28	12:20 p.m.	1 min.
29	12:21 p.m.	1 min.
30	12:22 p.m.	1 min.
31	12:23 p.m.	1 min.
32	12:24 p.m.	1 min.
33	12:25 p.m.	1 min.
34	12:2755 p.m.	2 min. 55 sec.
35	12:2955 p.m.	2 min.
Kelly	12:305 p.m.	55 sec.

Speeds referred to above are the speeds available on the Emsco Type HRB drawworks. The start from bottom was made in second speed or low speed on the line shaft and high speed on the drum shaft. Third speed corresponds to high speed on the line shaft and low speed on the drum shaft. Fourth speed is the high speed on the line shaft and high speed on the drum shaft. Although no appreciable difference will be noted in the time per stand pulled, the load on the engine was appreciably decreased. The first speed on the line and low speed on the drum shaft was never necessary.

Conclusion

The advantages of this type of rotary drilling equipment are readily seen, on account of the usual lack of fuel and water, that fact is the most important.

The Waukesha motors are designed for operation on either natural gas or gasoline and on natural gas can be run on a limited amount of fuel per day. The average fuel consumption should not exceed 100,000 cubic feet per 24 hours, which is approximately 25 per cent of the volume required for boiler operation. On gasoline, the fuel consumption will average 7 pounds per horsepower hour or about 400 or 500 gallons per 24 hours, depending on load conditions. For "wildcat" development work this will show a saving of at least 50 per cent over fuel oil for boiler operation.

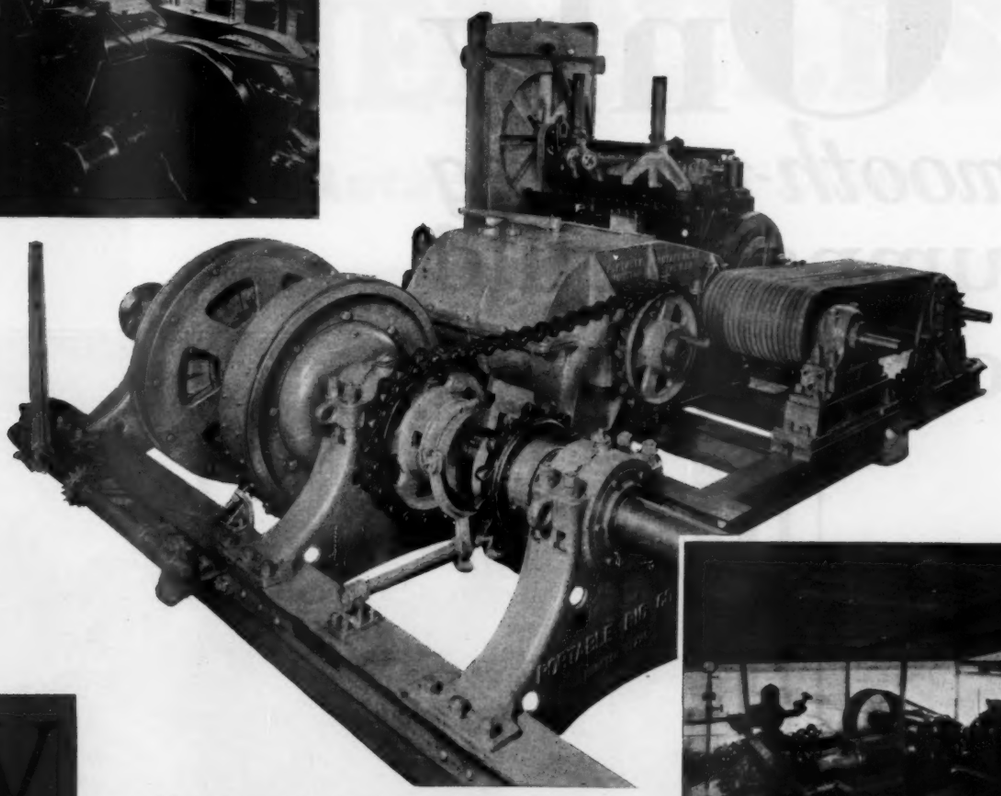
The water consumption is confined entirely to the make-up for the circulation in the case of this Waukesha installation, and this averaged 150 bbls. per day throughout. In the boiler arrangement, water is, of course, necessary for steam generation in addition to the same make-up for the slush circulation. From information available at this time, the average water consumption for a large steam rig will run from 1,000 bbls. per day to 1,500 bbls. per day depending on operating and water conditions.

Texrope drive to Oil Well "Mud Hog" slush pump.

The next important feature for consideration is the portable angle. Each piece of equipment used in this installation can be transported on the regular oil field trucks in use. The weight per unit does not exceed 14,000 pounds. In as much as each unit is tied to the other units, "rigging" can be accomplished with no loss of time or complicated foundation settings. Ordinary rig timbers are satisfactory for mounting this equipment and the number of timbers will, of course, vary due to the level of the derrick floor and the ground level. For this particular installation 19-inch by 18-inch timbers, 30 feet long, were used and laid in three levels. The timbers were keyed and were 100 per cent salvaged. Total number of timbers used was 12.

For the slush pump drives, either cement or timbers can be used for approximately the same cost. In this instance, two concrete slabs were laid using 7 yards of rock and 150 sacks of cement for the two slabs.

THE OBLIGATION OF LEADERSHIP IS TO LEAD



WHEN Mead Bros., Inc., sought to have a larger Portable Drilling Rig built for use in Oklahoma fields for deeper and heaviest drilling, they naturally came to the leaders in the construction of this type of equipment.

As a result, the Portable Rig Company has constructed, for them, the largest gasoline-natural gas Portable Drilling Rig ever manufactured . . . thus demonstrating the ability of the leaders "To Lead" whenever the occasion demands.

The Reversible Clutch Unit, which is of our own design and construction, is the largest and heaviest type ever made for rotary or cable tool drilling.

This Unit, of a very heavy construction, is mounted entirely on Timken Anti-Friction Bearings — two to each pedestal. This assures safety in operation and carrying heavy loads. This Reverse Clutch is designed particularly to stand extra heavy loads and shocks encountered in drilling operations. The housing and split type sprocket, employed in this unit to transmit power to any standard draw works, is carried between two extra heavy anti-friction bearings, which assures free idling motion at all times.

The entire reverse gear and bearings which carry housings for the reverse sprocket, runs in an oil bath, thus assuring proper lubrication at all times.

The shifting mechanism on this unit is so designed and constructed that it requires the least effort on part of the driller to operate. It is also exceedingly fast in operation. Ample provision has been made for lubricating all moving parts. The entire construction is of steel, and made extra heavy, which absolutely assures no breakage of parts, and it should operate over a maximum time with very little repairs needed.

The Gear Box is a double reduction Herringbone two-speed type of our own design. Being entirely enclosed, it operates continually in an oil bath, eliminating the open chain drives. By the use of this gear box, which is of the two-speed type, the operator when using three-speed draw works, is enabled to obtain six speeds. In the event of using a late type four-speed draw works, a total of eight speeds are obtained, thus giving a flexibility equal to either steam or electric rigs. All bearings are of the anti-friction roller bearing type.

This entire rig was assembled in our plant at Houston and shipped in three units: i.e., the Motor, Gear Box and Clutch. Each Unit is mounted on 10" "H" Structural steel beams and tied together by 4" specially designed and adjustable turnbuckles. The motor and gear box are connected by Texrope drive and the drive from gear box to clutch is by use of No. 1240 rotary chain — there being only two chains used on the rig.

The entire rig is readily set up or moved from job to job. In moving each unit is complete in itself and may be handled on an ordinary oil field truck.

PORTABLE RIG COMPANY, INC.
HOUSTON, TEXAS

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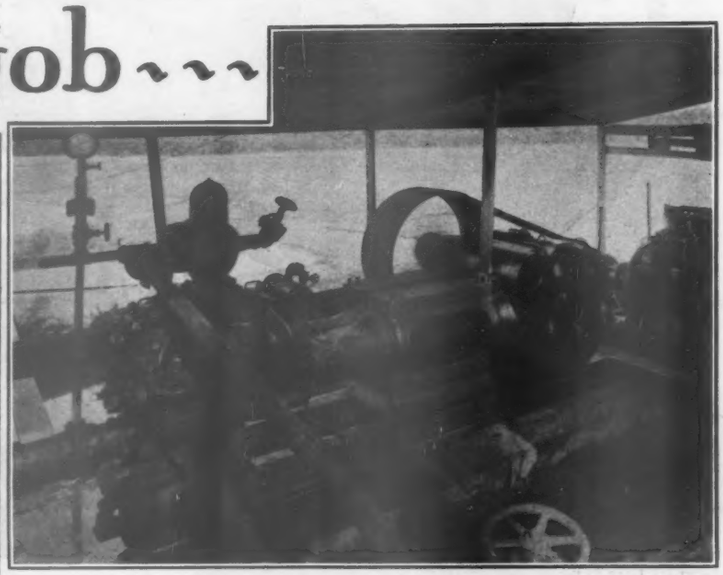

In drilling a well in the Oklahoma field, two "Oilwell" Mud Hog Pumps, 7¼" x 18", operated successfully with a portable drilling outfit driven by three 300 H. P. multiple cylinder engines. This unusual performance is another demonstration of the adaptability of "Oilwell" Mud Hog Pumps to any job with any type of power.

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For further information inquire at any "Oilwell" branch store or write for Bulletin No. 98 on Steam Driven Type or Bulletin No. 99 on Power Driven Type.

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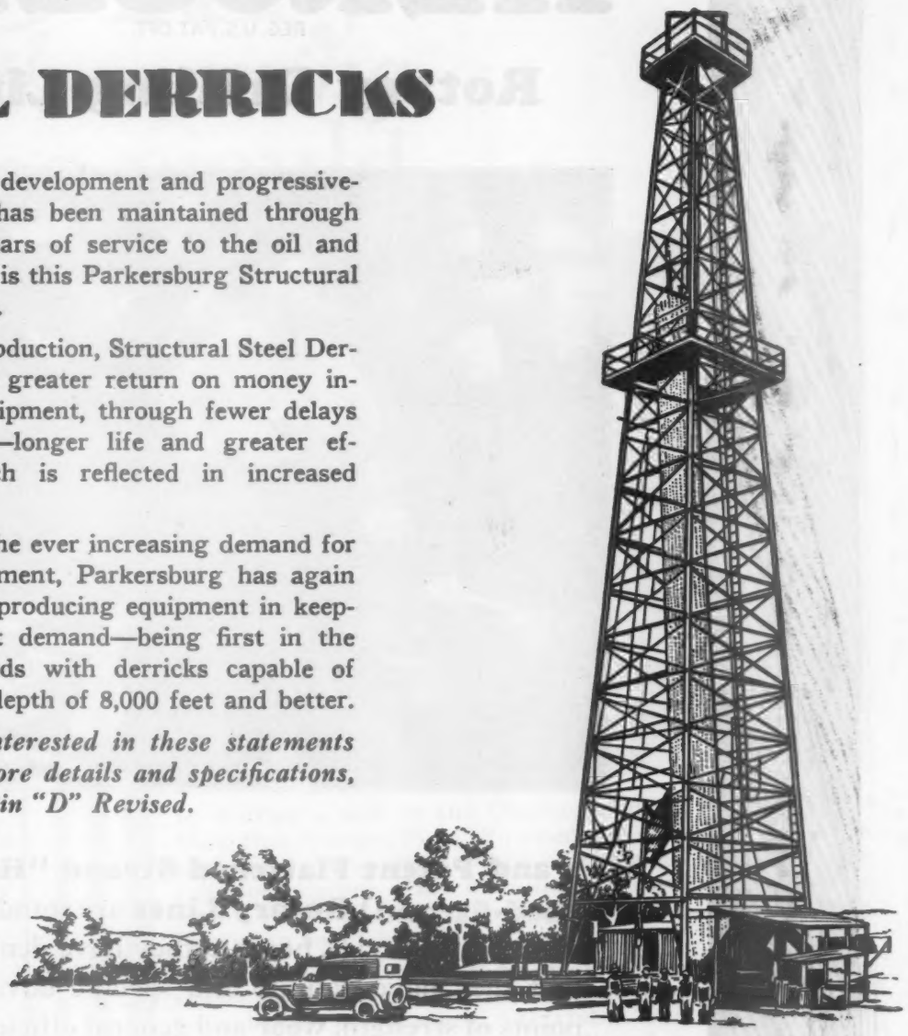

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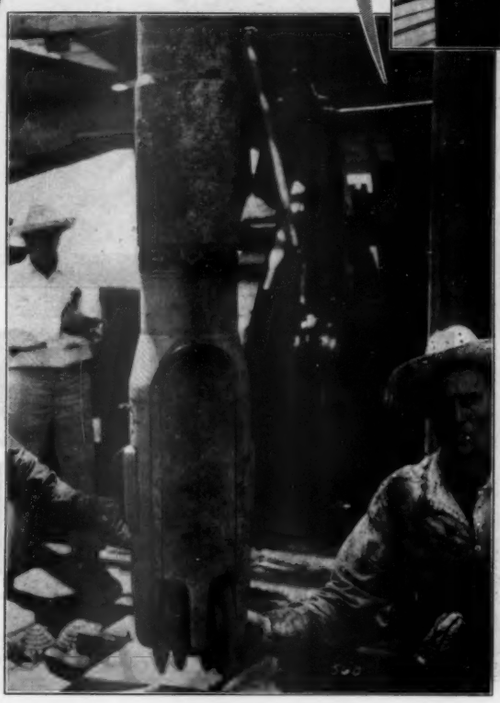

WHEN something new under the sun is having its chance, you can bet your bottom dollar that no risks are going to be taken in selecting the equipment necessary to help it go over the top. A significant choice, then, was that of Mead Brothers, sponsors of the new C. F. Camp Co. combination rotary and cable tool drilling unit, when they selected the Guiberson Disc Bit to help the unit demonstrate its drilling speed.

True to this faith, the Guiberson Disc Bit in the picture has been making 100 feet a tower. In the first six days of drilling time, it made 1500 feet of clean straight hole. The Guiberson Four-Disc, Reaming Rotary Bit has no equal for speed and straightness of hole.

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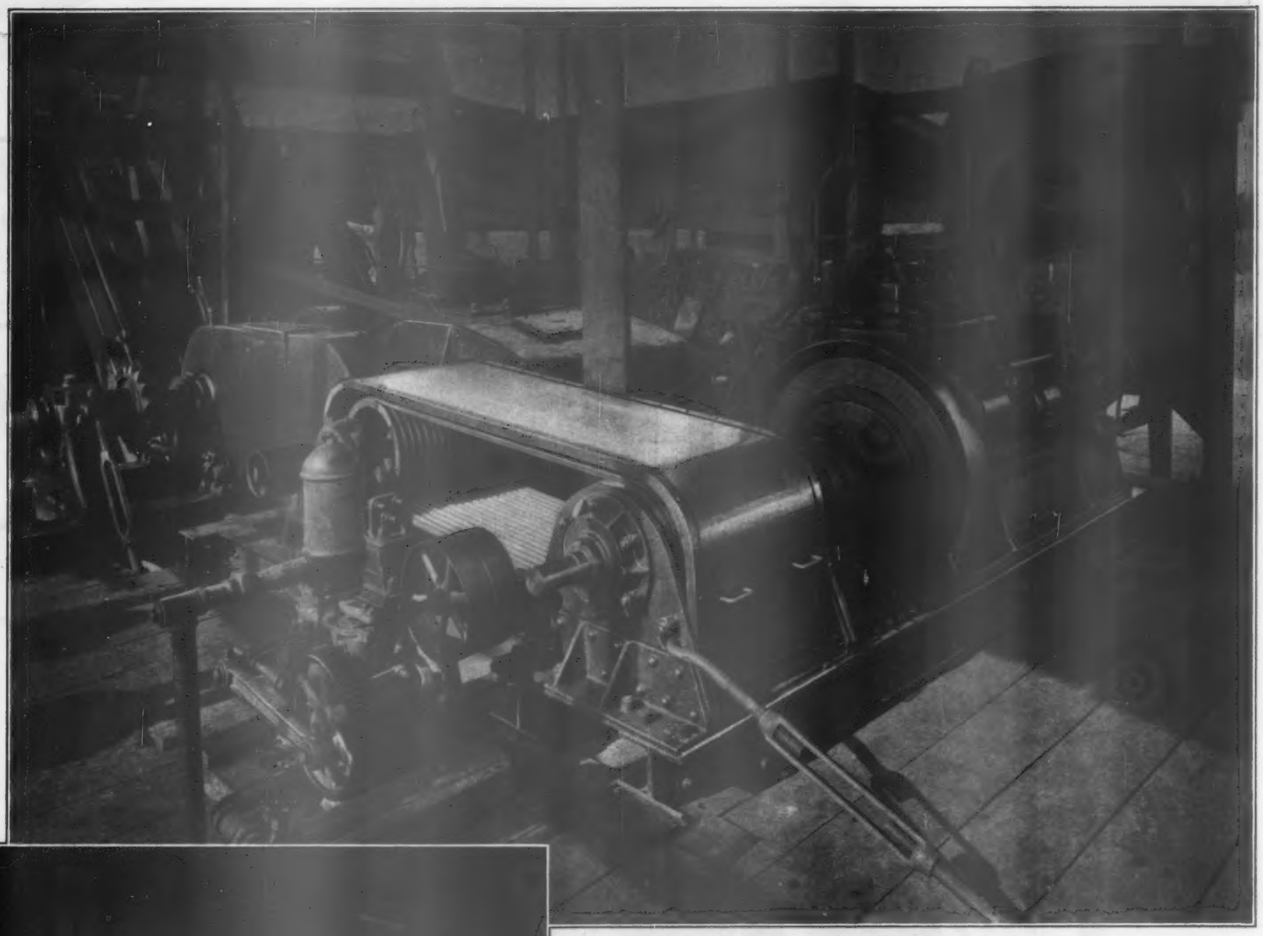

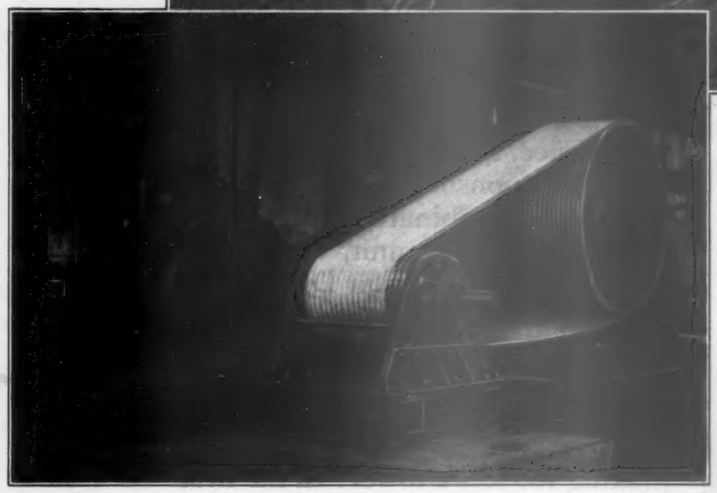

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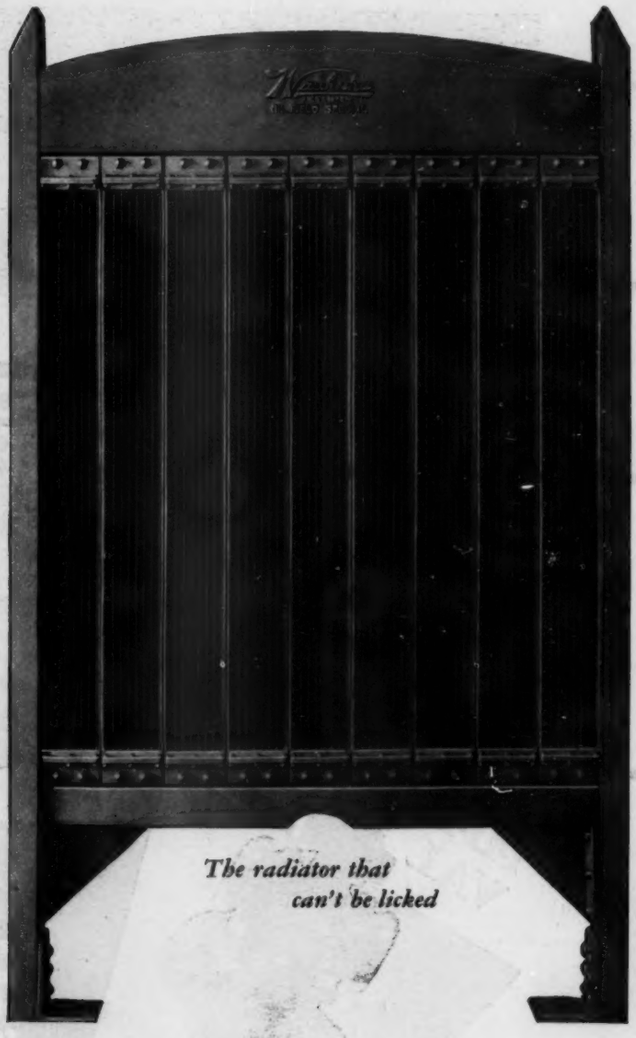

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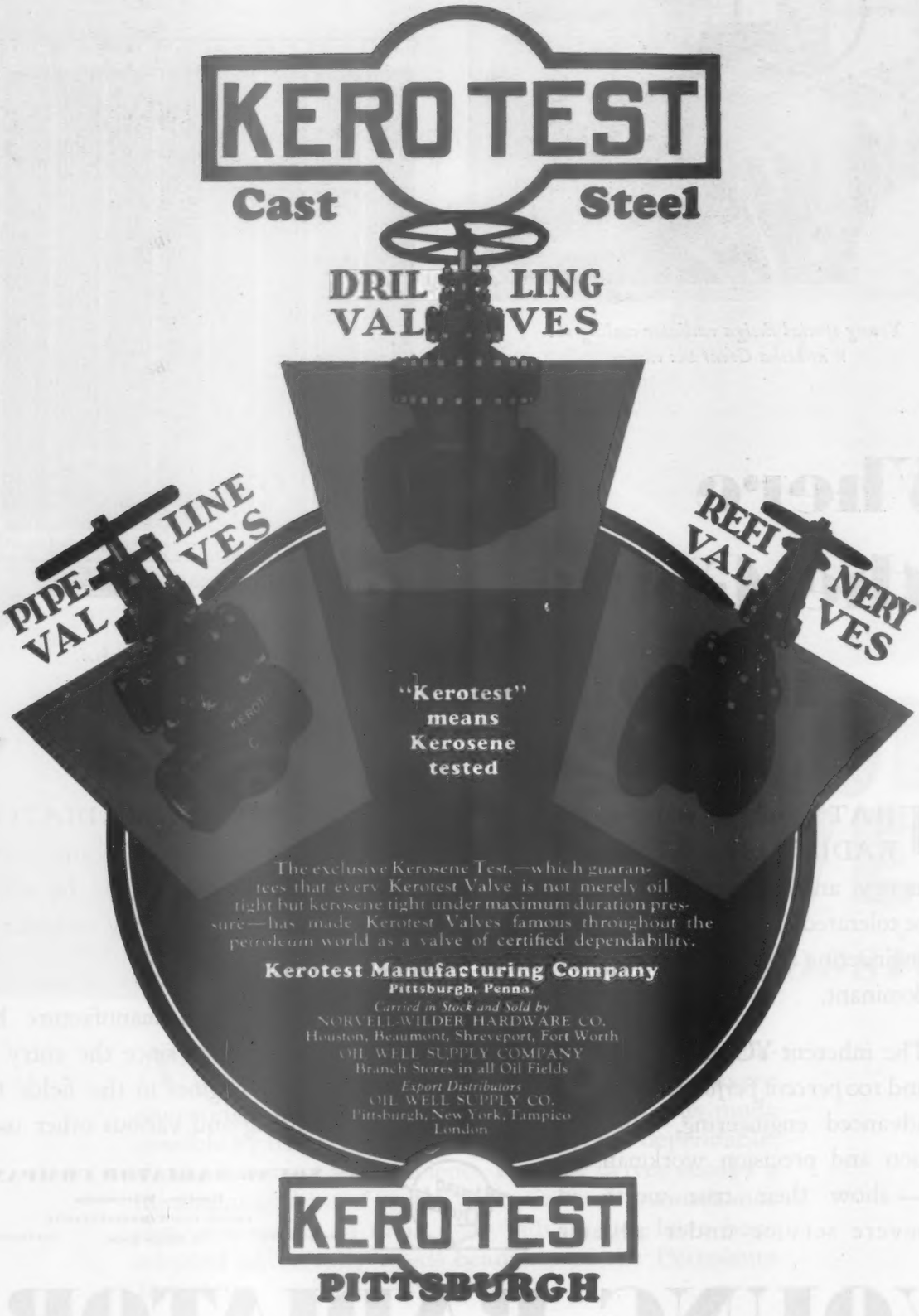
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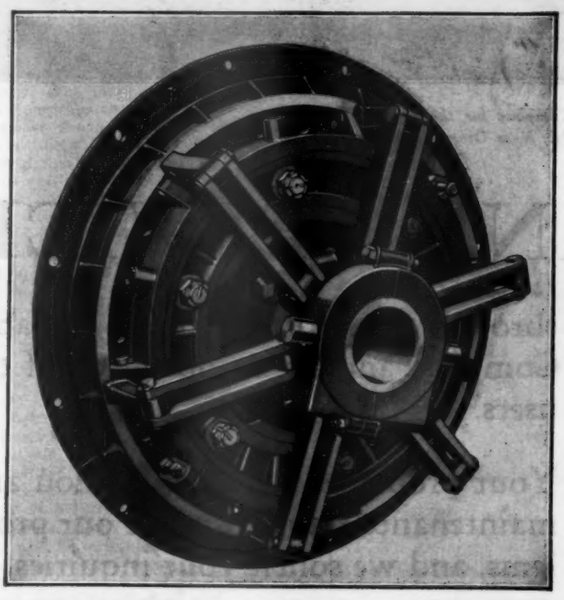
In On the Latest Developments



Above is shown the largest clutch ever built for oil field equipment —A 42-inch Twin Disc to be used on countershafts and for other heavy loads.

The engine, clutch and drive shown above are used in a new drilling rig designed entirely for operating efficiency and unfailing dependability. Every part and unit in the machine was selected with this purpose in mind.

For control of starting and stopping, both of the driller and mud pump, 24″ Twin Disc clutches are engineered into the engine flywheels. Two 42″ clutches are used on the countershaft.

The load carrying capacity, smooth engagement, ease of adjustment and long life of Twin Disc clutches have been demonstrated for years in oil field work. Their use in this rig is additional evidence of quality performance.

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Gauging and Sampling Natural Gasoline

Discussion of Prevalent Methods and Differences in Results Between Them. Need for Standardization

By P. W. Hill, A. C. Lyles, P. S. Magruder
General Petroleum Corp.*

The gauging and sampling of natural gasoline is a very important problem concerning both the gasoline manufacturer and pipe line companies. With a product of high volatility the effect of factors such as pressure and temperature are very marked and must be taken into consideration when determining its volume and characteristics. With attention drawn to several prevalent methods followed in sampling and gauging natural gasoline together with the differences in results between these methods, it is hoped that the need for standardization will be evident enough to convince everyone of its importance.

Separating the subject into two divisions we will first consider gauging procedure.

Gauging is defined as a determination of the volume of natural gasoline contained in a tank by first determining the height of liquid as read from a gauge board, tape, or other device, calibrated in inches and fractions thereof and then consulting a tank table on which the contents of the tank in gallons or barrels for each inch or fraction thereof of the height of the tank is given. This table is compiled by strapping the tank and the scale or gauge board is usually graduated and read to the nearest one-eighth of an inch.

Storage Tank

Since a tank, in which natural gasoline is held, must be suitably fitted with gauge glasses, thermometer wells, sample cocks, etc., so that an accurate determination of the volume and characteristics of its contents be obtained, we will consider first the proper equipping of such a tank. Also, as it is the gauger's duty to assure himself that there is nothing which can enter or leave the tank except through the proper pipe line connections after the tank has been accepted for shipment, we must discuss the tank from the angle of inlet and outlet connections. The mechanical advantages and disadvantages of various types of construction will not be gone into except so far as they are pertinent.

Tanks used for natural gasoline are built for the most part to withstand working pressures of 30 pounds or higher. They are erected both vertically and horizontally, with the former practice favored by some operators due to vertical tanks taking less ground space. A vertical tank is also less subject to gauging errors, the graduations on the gauge board representing practically the same volume of gasoline from top to bottom, while on a horizontal tank the volume of gasoline represented by each graduation is a function of the cord of the arc enclosing the segment filled with gasoline.

All tanks should be carefully levelled when installed, and checked occasionally to determine if any settling has occurred. The gauge board should be attached with a rigid connection directly to the tank with the zero inches on the board in line with the inside of the shell of the tank if set horizontally, or even with the lowest point on the inside of the bottom head if set vertically.

Gauge Glasses

The gauge glass connections should be tapped directly into the tank in preference to installing them on a gauge column. While the use of a gauge column has some mechanical advantages, and although it is realized that a gauge column properly installed allows as accurate a determination of the contents of the tank with the correct procedure as does the first arrangement, nevertheless we believe the installation of gauge glass connections directly in the shell of the tank will eliminate to a large extent the error in gauging due to change in density and composition of the liquid being gauged.

Sample Connections

Sample connections should also be tapped directly into the tank. These should be at least three in number and spaced so as to obtain a sample of the gasoline from the top, center and bottom of the tank at its usual long and short gauge levels.

Thermometer Wells

Provision should be made for thermometer wells at the top, center and bottom of the tank, the lower one being so placed as to allow taking the temperature of the gasoline at low gauge. Where a gauge column is used, three additional thermometer wells are necessary to obtain comparative temperatures in the column with those in the tank. Each gauge glass should also be fitted with a thermometer. The reason for this will be explained later.

Tank Connections

Tanks from which gasoline is shipped by pipe line should be equipped with two valves on the outlet between the tank and the pump header, provision being made to drain the nipple between the valves to detect leakage of either valve. This valve arrangement allows the gauger to seal a tank on the line by opening one of the valves while the operator controls the flow from the tank by regulating the other. The inlet to the tank may be either through the top or the bottom of the shell, but should be entirely separate from the shipping outlet. The top inlet is favored by those holding unit pressure on their storage and running the gasoline into the tanks by gravity; also there is the added advantage that if the line or connection should break due to settling or other disturbances, the content of the tank would not be lost. Each tank is further equipped with a water drain, repressuring line, vapor line and safety line, all of which, except the safety line, should be equipped with valves by means of which the gauger may entirely isolate it from the rest of the plant.

Figure No. 1 shows a tank properly connected and fitted with gauge glasses, sample cocks and thermometer wells such as will allow an accurate determination of the volume of gasoline and its characteristics throughout the height of the tank.

Figure No. 2 shows a tank using a gauge column on which to mount the gauge glasses. A correct and incorrect method of attaching this column is given.

Gauging Procedure

We will now take up in order and discuss some of the factors which must be considered to properly gauge a tank.

First, the gauger, on being turned over a tank of gasoline for shipment, should assure himself that after accepting the tank, no leakage or contamination can take place during the shipping period. This will require sealing the valves on the inlet, vapor, and drain lines. The proper amount of pressure necessary for shipping purposes should then be applied from a dry gas line. Dry gas is favored for this purpose since a minimum amount of it goes into solution in the gasoline.

After carefully draining out any water which may have collected in the tank, the gauger turns his attention to determining the true level of gasoline in the tank.

Here we have two factors affecting the density of the gasoline in the gauge glass. Both are caused by a change in temperature, but one involves a distillation process which changes the composition of the gasoline, while the other is merely an expansion or contraction of the same gasoline at the new temperature.

It should be remembered that the tank and gauge glass can be compared to the two branches of a "U." We know from experience that if two liquids of different density are placed in separate branches of a "U" gauge that the level in one will be higher than the level in the other. This is what occurs in a tank when the gasoline in the gauge glass is heavier than that in the tank, or vice versa. Likewise, we obtain a change in density due solely to the change in temperature. This may take place without a change in composition. It is to this effect of temperature that most of our errors in gauging may be charged. As an example, suppose a tank is filled with gasoline having an observed gravity of 75 degrees A.P.I. at 65 degrees Fahrenheit. The weight of this liquid would be 5.703 pounds per gallon, or it would have a specific gravity of .6852. Now again suppose the gauge column on this particular tank to be exposed to the sun and the gasoline in it to be at a temperature of 90 degrees (we are assuming here no change in composition). This gasoline we would find to have an observed gravity of 77.5 degrees A.P.I. and would weigh 5.636 pounds per gallon, with a specific gravity of .6770. It is thus evident that we have an appreciably lighter material in one branch of our "U" tube than in the other, which would indicate the level in the gauge glass side to be somewhat higher than the level in the tank side.

This may be shown by the following reasoning:

When two columns of liquids have different specific gravities are balanced, the product of the height of the first, times its specific gravity is equal to the product of the height of the second times its specific gravity, or: $h_1 g_1 = h_2 g_2$.

Referring to the above example and assuming a 30-inch gauge glass filled with 20 inches of gasoline, we have

$$20 \times .6770 = h_2 \times .6852$$

or

$$h_2 = \frac{20 \times .6770}{.6852} \qquad h_2 = 19.76 \text{ inches}$$

which is the height of an equivalent column in the tank.

To Overcome Errors

We thus find it requires approximately one-fourth of an inch more gasoline in the gauge glass to balance the gasoline in the tank and our gauge would read that much too high. To overcome this error it is necessary, first of all, to cool the gauge glass and the gauge column, if one is used, to a temperature approxi-

TABLE NO. 1—SHOWING DIFFERENCES BETWEEN SAMPLES TAKEN UNDER ATMOSPHERIC PRESSURE AND TANK PRESSURE

Distillation Recovery—80 per cent and below

Sample—	Distillation recovery Pressure (%)	Distillation recovery Atmospheric (%)	Vapor pressure (I.C.C.) Pressure (lbs.)	Vapor pressure (I.C.C.) Atmospheric (lbs.)	Gravity, ° A.P.I. Pressure (°)	Gravity, ° A.P.I. Atmospheric (°)
1	74.0	78.5	26.5	19.0	83.8	83.5
2	76.0	78.0	29.0	21.0	85.5	83.4
3	76.5	82.0	24.0	18.0	84.2	82.2
4	77.0	80.0	26.5	12.5	84.4	83.3
5	77.0	80.5	25.5	19.0	83.5	82.4
6	77.0	85.5	24.5	16.5	84.5	80.7
7	77.0	79.0	23.0	19.0	84.1	83.0
8	77.0	80.0	23.0	19.0	85.8	84.3
9	77.0	80.0	23.0	19.0	85.8	84.3
10	77.5	80.5	23.5	18.5	83.7	82.6
11	78.5	86.5	21.5	16.0	84.6	80.7
12	79.5	86.0	23.0	15.5	84.6	81.7
13	79.5	82.5	18.5	16.5	82.2	81.6
Average Difference	4.3%		6.3 lbs.		1.8°	

TABLE NO. 2—SHOWING DIFFERENCES BETWEEN SAMPLES TAKEN UNDER ATMOSPHERIC PRESSURE AND TANK PRESSURE

Distillation Recovery—80 to 85 per cent

Sample—	Distillation recovery Pressure (%)	Distillation recovery Atmospheric (%)	Vapor pressure (I.C.C.) Pressure (lbs.)	Vapor pressure (I.C.C.) Atmospheric (lbs.)	Gravity, ° A.P.I. Pressure (°)	Gravity, ° A.P.I. Atmospheric (°)
14	83.0	84.5	18.5	17.5	82.8	82.6
15	83.0	87.0	16.5	13.0	81.6	80.7
16	84.5	88.0	21.0	15.0	82.5	80.6
17	84.5	87.0	13.4	(R) 10.7	81.1	80.3
Average Difference	2.9%		3.3 lbs.		0.95°	

Distillation Recovery—85 to 90 per cent

18	85.5	86.0	15.0	14.5	79.3	78.3
19	87.0	89.0	17.5	13.0	81.9	80.5
20	87.0	89.0	14.7	(R) 12.5	81.3	81.0
21	88.0	91.0	17.2	13.0	80.2	78.0
22	89.5	90.0	13.5	(R) 13.5	81.6	81.2
Average Difference	1.6%		2.08 lbs.		1.06°	

TABLE NO. 3—SHOWING DIFFERENCES BETWEEN SAMPLES TAKEN UNDER ATMOSPHERIC PRESSURE AND TANK PRESSURE

Distillation Recovery—90 per cent and Above

Sample—	Distillation recovery Pressure (%)	Distillation recovery Atmospheric (%)	Vapor pressure (Reid) Pressure (lbs.)	Vapor pressure (Reid) Atmospheric (lbs.)	Gravity, ° A.P.I. Pressure (°)	Gravity, ° A.P.I. Atmospheric (°)
23	90.0	92.0	10.9	9.4	83.9	82.9
24	90.0	90.5	10.9	10.9	83.0	82.9
25	90.0	90.5	13.0	(ICC) 12.0	81.3	81.1
26	90.0	92.5	9.9	6.4	80.5	78.9
27	90.0	92.5	9.4	6.0	80.5	78.7
28	90.5	91.0	11.4	10.4	79.9	79.2
29	91.0	91.0	13.3	(ICC) 13.1	81.4	81.7
30	92.0	94.0	8.4	6.9	80.4	79.3
31	95.0	96.5	8.4	7.3	83.1	82.7
Average Difference	1.2%		1.58 lbs.		0.73°	

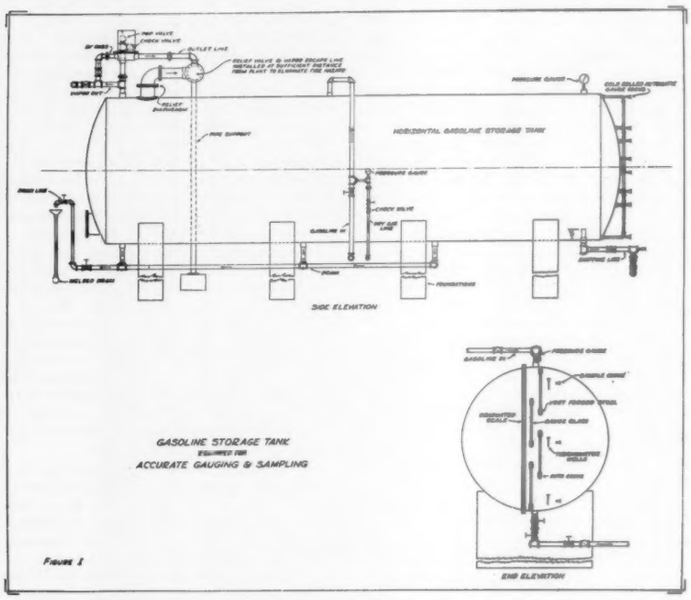
SUMMARY

Group—Recovery (%)	Ave dif Pres vs Atm—Dist Rec. (%)	Ave dif Pres vs Atm—V. P. (lbs.)	Ave dif Pres vs Atm—Grav. (°)
(74—79.5)	4.3	6.3	1.80
(80—84.5)	2.9	3.3	0.95
(85—89.5)	1.6	2.08	1.06
(90—95)	1.2	1.58	0.73

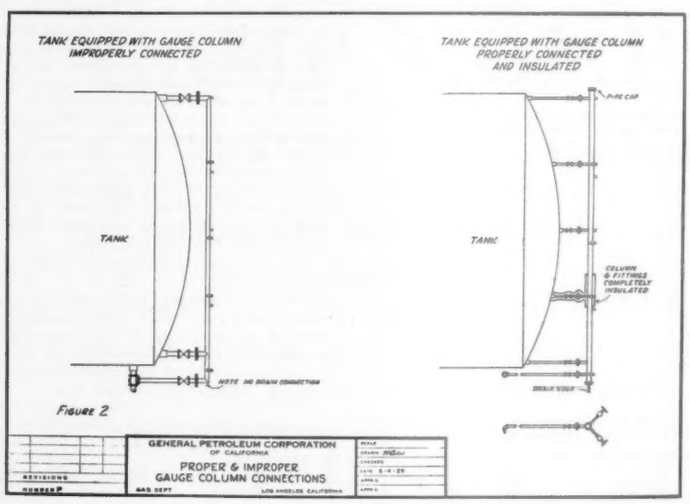
*Read by P. W. Hill at the monthly meeting of the California Natural Gasoline Association.

mately that of the liquid in the tank. Then, to insure no change in composition, the gauge glass and column must be drained and fresh gasoline from the tank allowed to fill it.

In the case of a tank equipped with gauge glasses attached directly to its shell, it is only necessary to drain the top gauge glass. Where a gauge column is in use, it is advisable to drain the entire column and allow it to refill from a connection on the tank nearest the liquid level. Since the gauge column contains so much more gasoline than does the gauge glass, a greater waste is necessitated in insuring proper conditions. Likewise, since its area and mass is greater, more gasoline must be wasted in cooling the column than is used for cooling the glass.



So far we have considered only a case where we have a higher temperature in the gauge glass or column than in the tank. The reverse of this condition is often noted during cold weather and a reversed error results. Using the same sample as we have taken above, but assuming that the gasoline in the tank is 95 degrees and that in the gauge glass 65 degrees, we would find that the liquid level in the glass would have to be twenty-three one hundredths of an inch lower than the liquid level in the tank to establish pressure equilibrium. Thus we would find the tank short gauged by this amount.


TANK EQUIPPED WITH GAUGE COLUMN IMPROPERLY CONNECTED
TANK EQUIPPED WITH GAUGE COLUMN PROPERLY CONNECTED AND INSULATED
TANK
TANK
FIGURE 2
GENERAL PETROLEUM CORPORATION OF CALIFORNIA
PROPER & IMPROPER GAUGE COLUMN CONNECTIONS

Having taken a "top" or long gauge the temperature of the tank is observed from a thermometer inserted in the center thermometer well. This reading is usd to correct the "gross" gallons in the tank as taken from the tank table to "net" gallons at 60 degrees Fahrenheit. The expansion factors by which the gross gallons are corrected to net gallons at 60 degrees Fahrenheit are taken from Bulletin No. 154 of the Bureau of Standards Condensed Tables.

After the tank has been shipped the gauger closes the outlet valve, sealing it shut, and then takes the bottom or short gauge, using the same precautions to insure a true level as were taken in reading the top gauge. The temperature of the gasoline remaining in the tank is also observed and used in correcting to net gallons at 60 degrees Fahrenheit. It should not be considered sufficient to determine the temperature of the gasoline at the top of the gauge only and correct the observed volume at the bottom gauge for the same temperature, for very often there is a considerable change in temperature while pumping out, particularly in the case of uninsulated tanks and an assumption of the same temperature will result in a small error.

Run Tickets

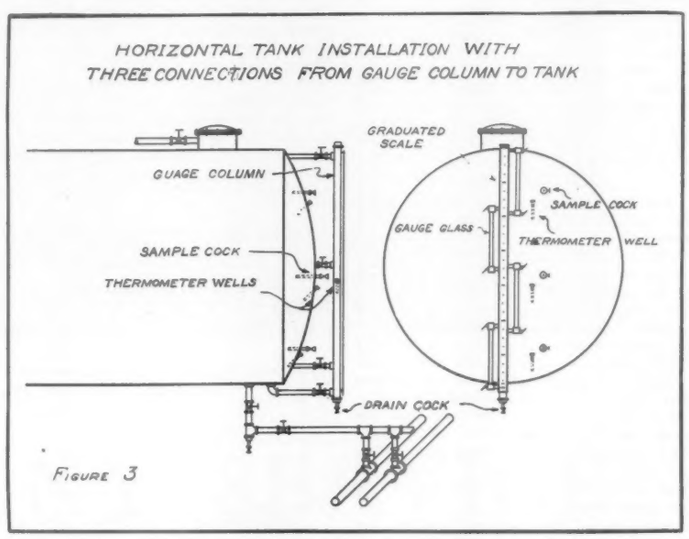
A run ticket is to all purposes a bill of sale with one party showing delivery and the other acknowledging receipt of a certain amount of gasoline. Both buyer and seller sign the ticket which is made in several copies, the seller retaining the original. The run ticket which is compiled by the gauger should show the following pertinent information: Name of seller, location (plant or field), date, tank number, long gauge with temperature, short gauge with temperature, together with the gross gallons, correction factor and net gallons at 60 degrees Fahrenheit in both cases. The total net gallons delivered is obtained by subtracting the net bottom gauge volume from the net top gauge volume. In addition to these items, some companies show the gravity, distillation recovery, end point, and other information which allows the proper handling and disposal of the gasoline.

Experimental Data

We will now take up some actual data, taken with the purpose of determining the magnitude of possible errors in gauging if the proper precautions are not observed. Examples have been selected from the various types of tanks in current use.

Horizontal tank with gauge glasses connected directly to tank (Figure 1):

The tank selected to represent the classification was of approximately 350-barrel capacity, and was uninsulated. The gasoline in the tank had a temperature of 77 degrees and was held under 13-pound pressure. The initial gauge was 8 feet, 3⅛ inches when the temperature in the top glass was 84 degrees. After draining the gauge glass three times, the gauge was 8 feet, 3 inches or a difference of 12 gallons. It is interesting to note that even if the gauge glass had not been drained the error would have been only 0.1 per cent and that the amount of gasoline wasted to arrive at a true gauge was negligible.



Horizontal tank with gauge column connected properly (Figure 2):

The tank investigated was of 200 barrels capacity with an insulated column connected at five points. The gasoline had a gravity of 80.4 degrees A.P.I. and was held under 10-pound pressure at a temperature of 91 degrees Fahrenheit. The initial gauge observed was 7 feet, 8¼ inches. After draining the top gauge glass three times a gauge of 7 feet, 8⅜ inches was obtained. This difference was probably due to a change in composition caused by weathering in the gauge glass, since after draining the entire column three times, the temperature in the column had reached that in the tank and the level returned to 7 feet, 8¼ inches.

Horizontal tank with gauge column connected at top and bottom of tank only (Figure 2):

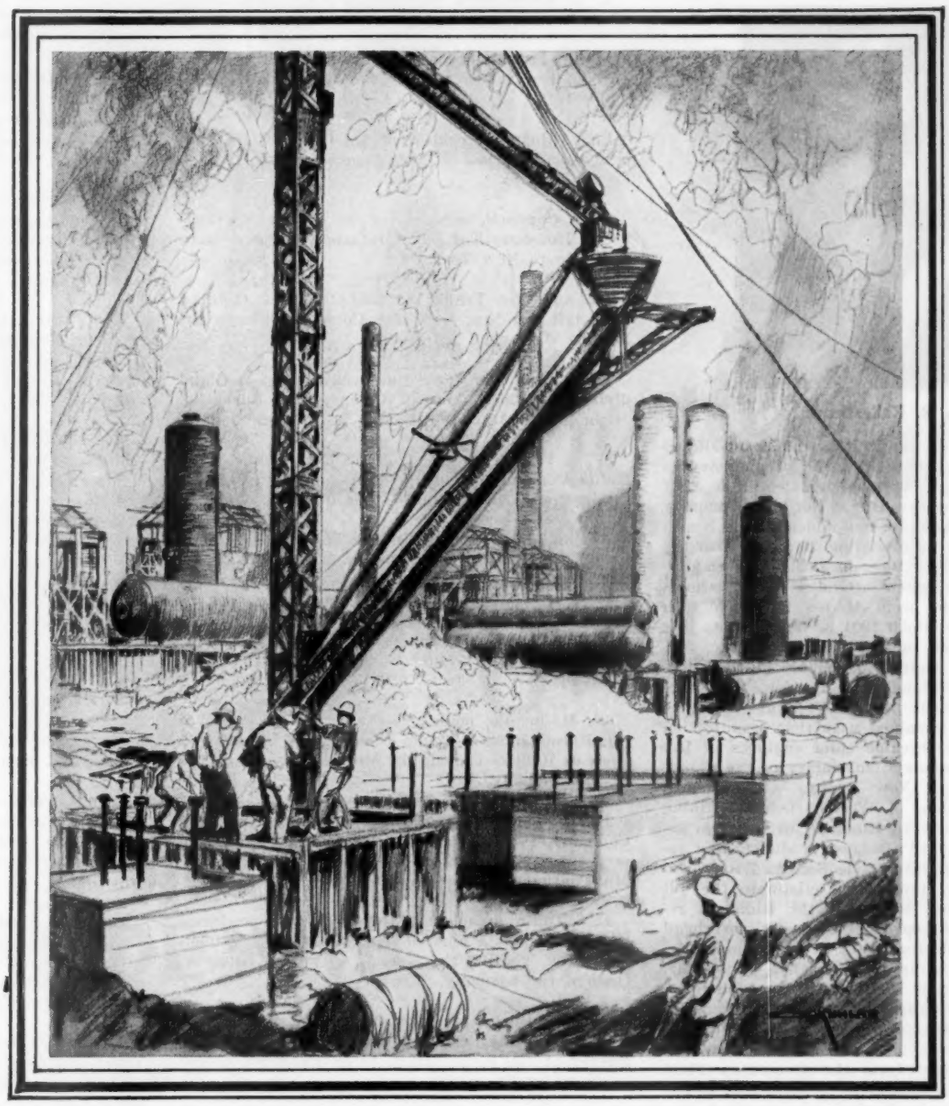
The tank selected for this case was a 500-barrel uninsulated tank equipped with an uninsulated column. In this instance we might expect a maximum variation between the true gauge and the observed gauge. The gasoline in the tank was at 74 degrees under a pressure of 31 pounds. The gravity of the gasoline in the tank was 79.9 degrees A.P.I. The initial gauge was 10 feet, 7⅝ inches representing 24,019 gallons. After draining the entire gauge column three times when the temperature noted in the gauge glasses became the same as that in the tank, the gauge was found to be 10 feet, 6½ inches, showing a difference of 1⅛ inches which at this point in the tank amounts to 144 gallons, or an error of 0.6 per cent. In the case of the particular tank investigated no difference was noted in the quality of the gasoline in the column with respect to that in the tank. However it is with this type of tank where the gauge column is connected to the tank at the top and bottom only, that an error of this sort might assume the largest proportions. If the temperature in the column reaches a point where the gasoline weathers under the tank pressure, the gravity of the gasoline remaining decreases, causing the apparent gauge to be in error in proportion to the length of the gauge column and the difference between the gravity of the gasoline in the column and in the tank. In case there is stratification in the tank, this type of insulation would be accompanied by the greatest error in gauging, since the only point at which gasoline may flow from the tank into the gauge column is at the bottom of the tank.

Horizontal tank with gauge column connected at three points (Figure 3):

In connection with the data obtained for a properly connected gauge column, the writer noted a special case in which an error was observed due to the fact that the column was not connected at a sufficient number of points. The tank in question had a capacity of 300 barrels, was insulated, and provided with an insulated gauge column connected at the top, middle and bottom. A thermometer well was inserted in the column just below the middle connection.

Under the initial conditions noted the gauge was 7 feet, 5$\frac{1}{16}$ inches. The temperature of the gasoline in the tank was 69 degrees under a pressure of 26 pounds. The temperature of the gasoline in the column at a point just below the middle connection was 71 degrees. The temperature of the gasoline in the top gauge glass was 89 degrees. Draining the gasoline from the gauge glass three times produced no difference in the gauge, although it was not possible to reduce the temperature of the gasoline in the gauge glass below 80 degrees by draining. This led to the conclusion the gasoline contained in the upper half of the column was at a higher temperature than that in the lower half, due to the fact that circulation was possible only in the lower half of the column. In this instance the true gauge should have been determined by draining the column and refilling it until the temperature in the top glass was the same as that in the tank. The gauger's usual procedure was to cool the gasoline in the gauge glass to the temperature of the tank by spraying gasoline over the outside of the glass. This gave

(Continued on Page 110)



Cracking PLANTS TO PRODUCE GASOLINE OF HIGHEST ANTI-KNOCK PROPERTIES

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MEN KNOWN IN OILDOM

R. R. Rakestraw

For more than 25 years Robert Ralston Rakestraw has been connected with the oil industry in America and Europe. As vice president and chief engineer of the Western Oil & Refining Company since 1923, Mr. Rakestraw has added to the record he built up during his preceding 20 years with the Standard Oil interests. Born in 1873 in Mechanicsburg, Pa., Mr. Rakestraw attended public schools until 1889, when he went to his first job with Armour & Company. Until 1901 he had various jobs and spent some time in South America.

After taking an engineering course at the Chiswick Institute of Technology in London, Mr. Rakestraw became engineer for the Underground Electric Railways and remained with that organization until 1905, when he became chief engineer of Romano Americano Rumania, subsidiary of the Standard Oil Company of New Jersey. With Richard Florian, now president of Western Oil & Refining Company, he was sent to Rumania to assist in establishing the Standard's largest producing and refining subsidiary in Europe. He perfected the "continuous distillation" process, to eliminate the old "batch" process then in use at the Rumania refinery. By it the Standard Oil Company's overhead in Rumania was decreased by $124,750 annually. Today the process is used universally. Out of Mr. Rakestraw's experience in Rumania came also perfection of the "internally fired" still, resulting in a further saving of $49,500 a year.

As the war clouds gathered over Europe Mr. Rakestraw was taken from the Rumanian Field and put in charge of emergency construction of the boat loading station at Norfolk, Va. Later he returned to Rumania and rehabilitated the Standard properties. In 1922 he joined Mr. Florian in organizing the Western Oil & Refining Company. Mr. Rakestraw's latest contribution to refining methods is the new true vapor phase cracking process adopted by the Shell and the Western Oil & Refining companies this year. He perfected a process of continuous carbon removal. Although living in Los Angeles, Calif., Mr. Rakestraw spends much time traveling. He is chairman of the board of directors of the Western Refining & Marketing Company, Ltd., and is a member of the American Petroleum Institute and of the Institute of Petroleum Technologists of England.

PERSONAL PARAGRAPHS

William and Edward Harris have returned to Petrolia, Ontario, from the Venezuela fields.

* * *

George R. March, formerly with the Barber Asphalt Company, is vice president of the McEverlast Company.

* * *

W. F. Worrell is now manager of the valve division of the Barber Asphalt Company, at Philadelphia, Pa.

E. Lee Moore spent last week-end in San Antonio, Tex.

* * *

Clay Mann, of San Angelo, Tex., has been in San Antonio, Tex., territory lately.

* * *

F. J. Bates, with the Sinclair Oil & Gas Company, has opened offices in San Antonio, Tex.

* * *

R. C. Holsworth, geologist, who has been in Laredo, Tex., for some time, has moved to San Antonio, Tex.

* * *

Earl Gilmore, president of the Gilmore Oil Company, has returned to Los Angeles, Calif., from a European trip.

* * *

D. B. Cogswell, secretary of the United Gas Company, Houston, Tex., has returned from a business trip to New York.

* * *

Mr. and Mrs. Frank Pollard, of Sarnia, Ontario, have left via New York for Colombia, where Mr. Pollard will spend two years.

* * *

A. L. Byrd, who for a time was head of the land division of the Dixie Oil Company in Muskegon, Mich., was a Muskegon visitor last week.

* * *

W. S. Farish, president of the Humble Oil & Refining Company, Houston, Tex., has left with his family for a three months' tour of Europe.

* * *

Adrian Moore, vice president and general manager of the Rycade Oil Corporation, Houston, Tex., has been in New York City on a short business trip.

* * *

Carl C. Adams, geologist, of Fort Worth, Tex., was in San Antonio, Tex., recently, returning from a trip to Zapata County to do some work for his company.

* * *

W. H. Beadle, manager of the pump division of the Byron Jackson Pump Company, is spending a week or 10 days visiting the Mid-Continent branches of the company.

* * *

Harry W. Schuetz, of the Colona Manufacturing Company, Pittsburgh, Pa., manufacturer of thread protectors, has been calling on the trade in the Mid-Continent area.

* * *

E. S. Dulin, president of the Byron Jackson Pump Company, made a hurried trip to the Mid-Continent last week, visiting the Kansas City and Tulsa offices of the company.

* * *

Edmund Burke, manager oil country sales for the Crane Company, Chicago, accompanied by J. H. Barker of the home office, is in Tulsa on special business for the company.

* * *

E. G. Walsh, assistant manager of domestic sales for The Texas Company of California, left Los Angeles a few days ago for Chicago, having been transferred to the Midwest city.

* * *

Richard Florian, president of the Western Oil & Refining Company, was in Los Angeles, Calif., on one of his many periodical trips from New York where he spends considerable time.

* * *

E. J. Murphy, president of the Taft Midway Oil Company, paid a hasty visit to the Midway-Sunset Field of Kern County, California, but has subsequently returned to his office in San Francisco.

* * *

A. T. Towl, New York, vice president of the Southern Group of Pipe Lines, H. C. Dorworth, Oil City, Pa., solicitor for the same group, V. A. Swisher, secretary for the Eureka Pipe Line Company, and E. W. Mecklin, general superintendent for the same company, attended a directors' meeting at Pittsburgh, Pa.

* * *

Charles L. Lockett, of Maracaibo, Venezuela, district manager in Colombia, Venezuela, and Trinidad for the International Derrick & Equipment Company, has returned to the United States for a short vacation. Mr. Lockett is well known throughout the entire Mid-Continent. Before going to South America he was in charge of the Denver, Colo., office for the International Derrick & Equipment Company.

E. R. Perry, chairman of the board, H. G. Davies, president, and Paul Murry, head of the land department, of the Superior Oil Corporation, Tulsa, were recent visitors to Houston, Tex.

* * *

Robert M. Lee, representative for the Oil Well Improvement Company, is leaving Tulsa June 25, for a three or four weeks' trip through Michigan, Pennsylvania, Ohio and Kentucky oil fields.

* * *

George Ratcliffe has been re-elected president of the California Natural Gasoline Association at the recent annual meeting in Los Angeles. This will be his third term as leader of this progressive organization.

* * *

P. H. O'Neil, a director of the Petroleum Corporation of America and numerous other oil companies, has just returned to Los Angeles, Calif., from a six weeks' business trip to New York and other eastern points.

* * *

E. A. Brock, of the Standard Oil Company's engineering department, is spending considerable time in the Kettleman Hills area where the Standard has just started construction of a new tank farm and pumping plant.

* * *

M. E. Lombardie, of the California Company, San Francisco, has been visiting the southern division office of that company, Dallas, Tex., and has been looking over the company's various properties over the State of Texas.

* * *

F. Ray McGrew, president, and W. B. Fulton, chief engineer, of the Standard Pipe Line Company, flew to Jennings, La., in the Standard Oil Company's plane for an inspection of the Standard's Gulf Coast properties and operations.

* * *

A. C. Evans, of the Kennedye-Plumb Corporation, has been transferred from Oklahoma to Houston, Tex., where he will represent the company among operators of the Gulf Coast. Mr. Evans has been making his home at Holdenville, Okla.

* * *

W. S. Evans, president, and F. E. Bernsen, vice president and general manager of Lucey Products Corporation, accompanied by their wives, sailed from New York last week for an extended business trip to London, Paris and the Rumanian cities.

* * *

Dr. Van Holst Pellekaan, chief geologist of the Shell Petroleum Corporation, St. Louis, Mo., spent several days in Houston, Tex., on his tour in the company's plane, "The Gold Shell," over the Gulf Coast, Southwest Texas and the Mid-Continent.

* * *

George D. Friddell, aero oil salesman for the Texas Pacific Coal & Oil Company, and "Buddy" Jones, pilot of the company's monoplane, are making a 5,000-mile trip, covering several cities on the West Coast with the western division sales manager, Robert V. New.

* * *

H. C. Glosser, Houston, Tex., representative of the United Gas Company, is in Cody, Wyo., where he will be for some time in connection with the operation of the Cody Petroleum Company, a large interest in which recently was acquired by the United Gas Company.

* * *

George H. Jaques, general superintendent of the producing department of the Midwest Refining Company, and Harry S. Bosart, assistant, recently visited Denver, Colo. Mr. Jaques will inspect company operations in New Mexico, and Mr. Bosart will go to Walden, Colo., where the company is starting a test in the Buffalo Creek district.

* * *

D. B. Harris, district superintendent in the Salt Flat district of the Humble Oil & Refining Company, has been transferred to Houston, Tex., as division superintendent for the Gulf Coast. Fred Rice, now division superintendent of North Louisiana and Arkansas at Shreveport, La., succeeds Mr. Harris in the Salt Flat district. Mr. Harris formerly was division superintendent at Shreveport for several years until his transfer to Salt Flat. As the North Louisiana and Arkansas holdings of the company have been sold to the Standard Oil Company of Louisiana no successor will be appointed to Mr. Rice at Shreveport.

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Greatest of Oklahoma Oil Fields

90% OF HOLE MADE WITH HUGHES *Self-Cleaning* CONES

Hughes Simplex Rock Bits equipped with Hughes Self Cleaning Cones were used almost exclusively in the development of this great field.

Throughout the Rotary fields of the world, where PERFORMANCE is considered the prime requirement, Hughes Rock Bits and Hughes Cones are used.

Discovery of the Seminole City, Searight, Earlsboro, Little River, Carr City, Maud, Mission and Bowlegs pools, designated collectively as the Seminole area, was the most important new development in Oklahoma in 1926. The discovery well was the Tolof Fixico 1, drilled by R. F. Garland and the Independent Oil & Gas Company and was in the Seminole City pool. It made 900 barrels at 4065 feet, but when deepened increased to 9200 barrels. The Bowlegs and Little River Pools were later added to the Seminole area.

The peak daily production was reached July 30, 1927, when the gauges showed a little more than 525,000 barrels. This was the greatest ever reached by one area in Oklahoma.

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Oklahoma City, Okla.

Main Office and Plant
HOUSTON,
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New York City

GAUGING AND SAMPLING NATURAL GASOLINE

(Continued from Page 106)

a gauge of 7 feet, 4½ inches or a difference of 44 gallons. It is believed, however, that this gauge is in error due to the fact that the gasoline in the top half of the column to which the gauge glass was connected is still at a different temperature from that in the tank.

Vertical tank with gauge column (Figure 4):

The tank examined was one of 500-

Vertical tank with gauge glasses connected directly to the tank (Figure 4):

The tank used for this example was of 500-barrel capacity, insulated, and equipped with 10-gauge glasses connected directly to the tank. The gasoline in the tank was at 63 degrees Fahrenheit and was under atmospheric pressure. The initial gauge when the temperature of the gasoline in the gauge glass was 86 degrees Fahrenheit, was 21 feet, 8¾ inches. After draining the gauge glass several times until the temperature of the liquid in the gauge glass was 65 degrees, the level became 21 feet, 8½ inches or a difference of 19 gallons.

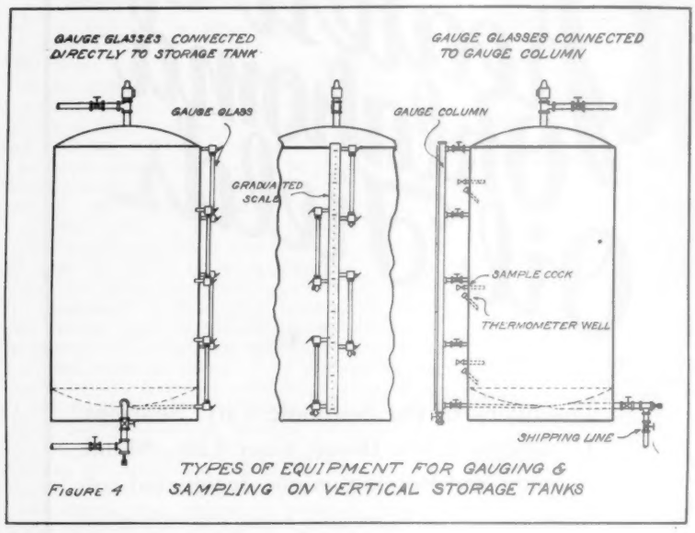


FIGURE 4 TYPES OF EQUIPMENT FOR GAUGING & SAMPLING ON VERTICAL STORAGE TANKS

Summary and Conclusions

In summarizing our remarks relative to the possible errors noted in our investigation of the various types of tanks, we have observed the greatest error in connection with the horizontal tank, having a gauge column connected to the tank at only two points. The possible error in this case amounted to 0.6 per cent. The smallest error was observed on a vertical tank where the gauge glasses are connected directly to the tank. In this case the error observed was only .05 per cent. The average error possible when the proper precautions are not taken is approximately 0.15 per cent.

With reference to the effect of an improperly connected gauge column it might be appropriate to describe an experiment made in connection with this paper. The tank being investigated was of 1,000-barrel capacity, and was fitted with a gauge column connected in the proper manner. The tank was approximately half full. After the initial gauge was made the column was drained and refilled several times. After this procedure the gauge was observed the same as before, since the liquid level in the column was only 2 inches above the nearest tank connection. This led to an investigation of the possible error if there were only top and bottom connections. The middle connections were closed and the column allowed to warm up. At the end of 15 minutes a second gauge was made and the difference between the two determined to be 158 gallons, or an error of 0.5 per cent.

Essence of Gauging

To sum up the essence of gauging, we find that the gauger must accurately determine the amount of liquid originally in the tank and the amount of liquid remaining in the tank after the shipment has been made, in order to arrive at the amount shipped by difference. In order to accurately obtain a true gauge of the amount of liquid in an enclosed tank by means of an outside gauge glass, the temperature and quality of the liquid must be the same as that in the tank. It is also the duty of the gauger to make sure that all of the gasoline represented as shipped, actually leaves the tank without loss or contamination.

In concluding our discussion on gauging, we would like to point out the fact that most of the errors were small in themselves, amounting to only .15 per cent of the total volume gauged. However, considering the magnitude of the errors from the angle of per cent of total volume is misleading, owing to the large gallonage handled. If, on the other tand, we consider a case where 4 tanks of gasoline are shipped from the plant daily, in the gauging of each of which an error of ten (10) gallons was made, the total error in volume would be fifty (50) gallons per day, or 1,500 gallons for thirty (30) days. Assuming a price of 7 cents per gallon for the product, the error in gauging would cost either the plant operator or pipe line company, depending on the direction of the error, $105 per month. This is a good example of the accumulative effect of small errors.

Sampling

Considerable thought should be given to the sampling of natural gasoline for pipe line shipment. Although care should be exercised under all conditions when taking a sample of this commodity, it is particularly necessary where the gasoline is under pressure, for usually we find the vapor pressure of the gasoline at tank temperature, just about equal to the pressure held on it. Any lowering of the pressure, or increase in temperature will cause boiling which will result in the removal of some of the lighter constituents of the gasoline and hence a change in composition. Two general methods of sampling are discussed here. These have been termed atmospheric sampling, and pressure sampling. The former was almost universally used for routine work until about two years ago, and is still current procedure at a number of plants.

Atmospheric Sampling

The procedure for atmospheric sampling usually consists in cooling a glass bottle under a stream of gasoline, then placing the end of the sample connection in the neck of the bottle and opening the valve slightly, allowing the bottle to fill slowly. No ice or other accessories were necessary provided the laboratory and ice box were not far distant. In this procedure, considerable atomization takes place, and this is responsible for the greater portion of the loss of light fractions. In addition we find that a low temperature cannot be maintained by merely precooling the bottle. After drawing the sample, the temperature is nearly always above 40 degrees Fahrenheit, and our chance of reducing the loss by lowering the vapor pressure is limited.

Another method is that of cooling the gasoline and bottle by means of an iced coil. The liquid is allowed to flow from the tank through the cooled copper coil and into the bottle which is also immersed in the ice bath. This method may possibly give results of sufficient accuracy for plant control work, especially when the distillation recovery of the product is 90 per cent or above.

However, the atmospheric method of sampling cannot be recommended from any angle, for although with very stable gasolines, only small differences may exist between the composition of the sample and that of the gasoline in the tank, nevertheless, there always remains a somewhat higher distillation recovery with a lower vapor pressure than is true of the contents of the tank.

Pressure Sampling

The second general procedure of sampling is termed the pressure method and consists in transferring the natural gasoline from the tank to the container by the displacement of some appropriate liquid or gas, maintaining tank pressure upon the sample container during the process. This method is being rapidly adopted by the industry at large, for it is becoming increasingly important that we know the true characteristics of our product. A pressure sample is as nearly a true representation of the gasoline in the tank as we can obtain.

Pressure Sampling Bomb

It is obvious that a steel bomb would be necessary for this procedure. While there are several different bombs used by the various companies, they are for the most part of the same general type; consisting of a piece of pipe of proper size to give the capacity desired, welded at both ends and equipped with one-fourth inch connections top and bottom, with a thermometer well for determining the temperature of the contents. Figure No. 6 shows a bomb used by one of the larger companies. Needle valves are recommended and a connection for a pressure gauge is placed in the top of the bomb, the purpose of which will be explained later.

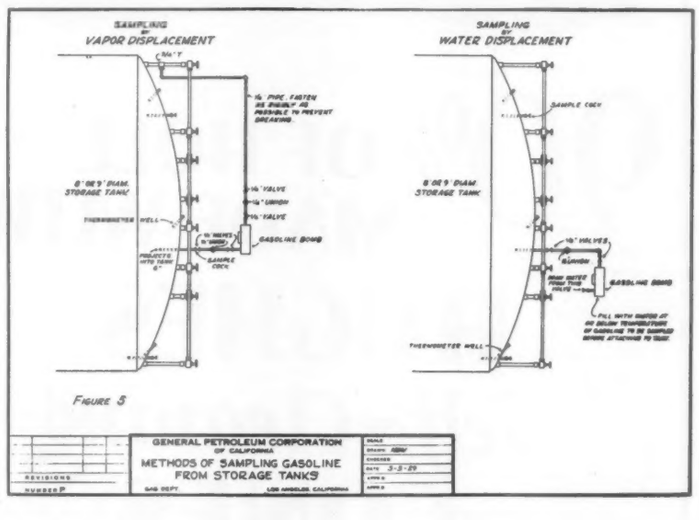


FIGURE 5

Procedure

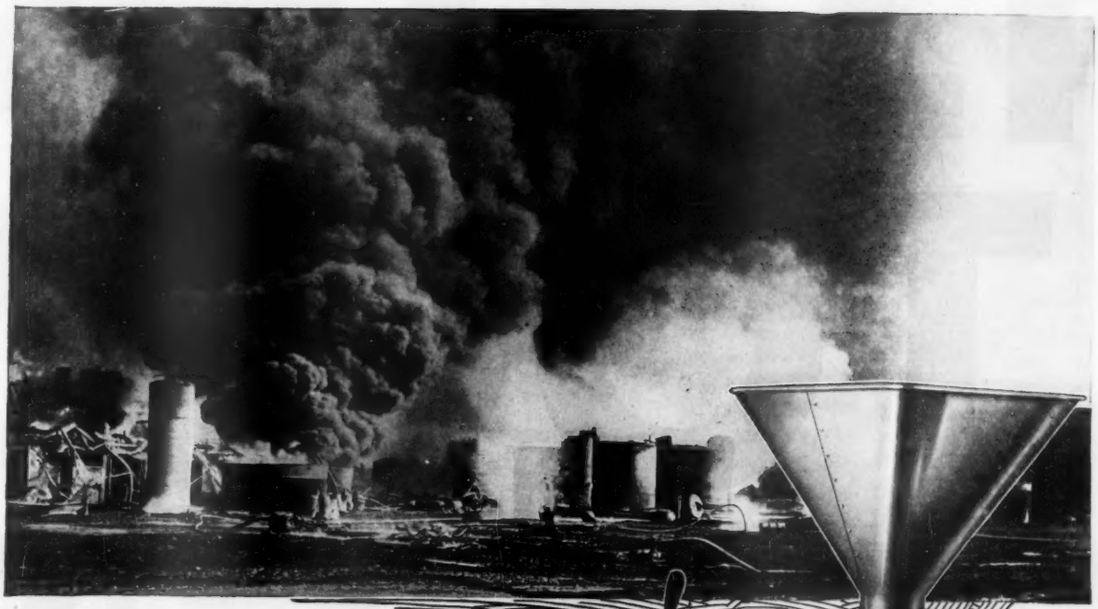
In general it is always advisable to flush out the line between the tank and the bomb. This is particularly important in case the sampling connection is attached to a gauging column. Another point to consider is the level at which a representative sample can be withdrawn from the tank. We are quite sure that stratification of gasoline is possible under unusual conditions, such as, if we consider a light product being pumped into the bottom of a vertical tank, followed by a heavy gasoline. Under this condition a representative sample would be impossible. However, samples have been taken from vertical storage tanks at different levels under ordinary plant practice and the results obtained do not indicate that the composition of the gasoline at the bottom is any different from that in the top of the tank. Consequently, we may state that a sample taken from the center of the tank will be representative in most cases.

Figure No. 5 shows the procedure that is known as the vapor displacement method. The top of the bomb is connected to a point above the liquid level in the tank, while the bottom valve in the bomb is connected to a point below the liquid level. The position of the bomb must be below the surface of the gasoline in the tank. The valves connected to the vapor space in the tank are opened first, followed by the liquid valves as soon as the full tank pressure is on the bomb. There are several disadvantages to this method: (1) Unless the temperature of the bomb is the same as that of the gasoline in the tank, we may have either condensation or vaporization taking place in the sampling system, depending on whether the bomb and lines are colder or warmer than the liquid or vapor flowing into it. Thus, it is possible to obtain a sample of gasoline in the bomb which is of different composition than that in the tank. (2) Each tank must be equipped with a more elaborate system of piping. (3) It is impossible to know when the bomb is filled with gasoline unless the bomb is fitted with a gauge glass.

Second Method

A second pressure sampling method is that of upward displacement of air. The lower valve on the bomb is opened to the gasoline in the tank and the top valve is slightly opened to the atmosphere, allowing the displaced air to escape slowly while maintaining a back pressure on the entering liquid, equivalent to the tank pressure. When the bomb has filled, the gasoline is allowed to overflow down its sides. This serves the double purpose of cooling the bomb and purging out the liquid which first entered. This latter operation is necessary since some of the lighter components of the gasoline undoubtedly have vaporized due to the partial pressure of the air originally in the bomb, and possibly to a higher bomb temperature. If the bomb is thoroughly cooled before sampling and gasoline allowed to escape until a volume equal to twice that of the container has been displaced, this method can be relied upon to give accurate results. After detaching the full sampler from the tank, a portion of the gasoline must be drained from the bottom valve to create a vayor space. This latter action is obviously very important in all cases of liquid sampling, in order to allow for the expansion of the gasoline under increased temperature. The disadvantage of this method for tak-

(Continued on Page 114)



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And the use of proper chemicals is extremely important. They must be pure, 100% foam producing, easily handled and free-flowing. FOMON twin dry chemicals, fed simultaneously, meet all these requirements. Unlike the single powder method which contains a percentage of "filler" to preserve the ingredients, FOMON twin dry chemicals, requiring no "filler," are outstanding in that they produce 100% foam.

Every oil company, large or small, should be protected by FOMON. Our engineers, long experienced in oil fire protection, welcome the opportunity to prove the superiority of FOMON. Their services are available to the oil industry in helping to solve any fire protection problem.

Note:—the FOMON folder, giving description, with diagrammatic sketches, showing the portability and flexibility of the FOMON method of protecting oil properties will be sent upon request.

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WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

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UPPLY CO.

BURGH, U.S.A.

BRANCH STORES
IN ALL OIL FIELDS

GAUGING AND SAMPLING NATURAL GASOLINE

(Continued from Page 110)

ing small samples lies in the possibility of incomplete purging.

Third Method

The third and perhaps the most reliable method of pressure sampling is that of water displacement. (Figure No. 5.) The bomb is first filled with water and cooled to a temperature below that of the gasoline in the storage tank. The gasoline is allowed to flow into the top valve of the bomb and the water is drawn off very slowly from the bottom valve while maintaining the same pressure on the bomb as is on the tank. The pressure gauge on the bomb, referred to before, allows the rate at which water is withdrawn to be controlled so that no drop in pressure is experienced. This is particularly advisable in taking large samples. The same precautions are necessary for insuring a vapor space as are mentioned in the preceding method.

One disadvantage that applies to all methods of pressure sampling is the necessity of draining some of the gasoline from the bomb to maintain a vapor space. This leads to slight changes in the composition of the liquid due to the forming of vapor which fills the space above the liquid. Some device will undoubtedly be worked out in the near future to eliminate this error.

Experimental Data

Comparison of the distillation recovery, vapor pressure and gravity has been made between the pressure and atmosphere methods of sampling. The pressure samples were taken by one of the last two methods discussed and the atmospheric samples were obtained by the first procedure mentioned under "Atmospheric sampling."

Some of the data has been taken from records and the vapor pressures represent the I.C.C. method. The Reid method was used on the more recent investigations. The tests have been arranged according to the distillation recovery of the pressure samples, beginning with the lowest (74 per cent) and ending with the highest (95 per cent), Table No. 1, shows the first group which ranges from 74 per cent to 79.5 per cent. It will be noticed that the distillation recovery of the atmospheric sample averages 4.3 per cent higher than that of the pressure sample. The vapor pressure by the I.C.C. method shows an average difference of 6.3 pounds and the gravity an average of 1.8 degrees A.P.I. Needless to say, this data was taken from records and applies to the past when a much more volatile product was made. It is interesting, however, to note the wide discrepancies between the two methods of testing in this group and to watch the decreasing differences as we pass into groups of higher distillation recoveries.

Atmospheric sampling was almost universally used at the time when 75 to 80 per cent recovery gasoline was in style and it was at a time that pressure sampling would have been most useful.

Table No. 2 shows two groups. The first covers the range from 80 to 84.5 per cent distillation recovery. The distillation recoveries, vapor pressures, and gravities show average differences of 2.9 per cent, 3.3 pounds and 0.95 degree A.P.I., respectively. The latter group contains samples between 85 and 89.5 per cent distillation recoveries and shows average differences of 1.6 per cent, 2.08 pounds and 1.06 degrees A.P.I., the latter figure being slightly inconsistent. There were relatively few samples obtained for these two groups, but the results bring out the point of decreasing differences as the volatility of the gasoline decreases.

Table No. 3 represents present day conditions and most of the samples were collected expressly for this paper. The Reid vapor pressure method was used unless otherwise noted. Nine different tanks were sampled representing distillation recoveries between 90 and 95 per cent. The average differences are only 1.2 per cent, 1.58 pounds and 0.73 degrees. However, the maximum differences are 2.5 per cent, 3.5 pounds and 1.8 degrees A.P.I. which justifies the use of the pressure method even on products of 90 per cent recovery or better.

Summary

Summing up our remarks on sampling, we have outlined the various methods of sampling and have made observations on the advantages and disadvantages of all types. From the results of our experimental data we believe that the only samples that are worth taking are those which are most closely representative of the character of the gasoline in the tank. Based on this conclusion we believe that the sample taken under the pressure of the tank is the most accurate.

General Conclusions

In conclusion we should like to stress the importance of accurate gauging and sampling. In general, gauging errors are usually in the same direction and cumulative so that over a period of time they may assume important proportions. As for importance of sampling, we may state

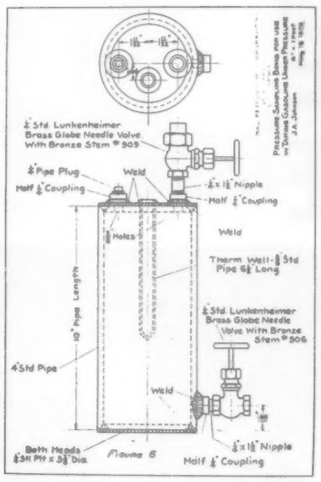
¼ Std. Lunkenheimer Brass Globe Needle Valve With Bronze Stem # 909
¼ Pipe Plug
Half ¼ Coupling
Weld
4 x 1½ Nipple
Half ¼ Coupling
Weld
Holes
Therm. Well-¾ Std Pipe 6½ Long
¼ Std. Lunkenheimer Brass Globe Needle Valve With Bronze Stem # 906
10" Pipe Length
4 Std Pipe
Weld
Both Heads ¼ Std Plt x 3½ Dia.
Half ¼ Coupling
¼ x 1½ Nipple

Figure 6

that, since natural gasoline is bought and sold on the basis of tests as to the character of the gasoline, a test can be no more accurate than the sample on which the test is conducted.

The criteria of good gauging and sampling may be summed up in the answer to the two questions, "Are we sure that the same amount of gasoline as determined by gauging is actually shipped?" and in the case of sampling, "Are we sure that the sample is representative of the material in the container from which it was withdrawn?"

It is hoped that sufficient data has been presented to make clear the need for standard procedures for both gauging and sampling. Such procedures if adopted, we believe, would prove of great value to the industry at large.

CANADIAN FIELDS

(Continued from Page 67)

Drilling of both is to be handled by Imperial Oil, Ltd.

In the south end of the field, Wellington Oils' No. 1, LSD 1, Section 20-19-2w5, south of Home's No. 1, has spudded in. Noble-Olsen Drilling Co. of Tulsa has spudded in Commonwealth Petroleum's No. 2, LSD 7, Section 9-19-2w5, with a rotary outfit. Merland Oils' No. 1, LSD 13, Section 27-18-2w5, is reported spudded in with a heavy duty rotary outfit, Pat Adams handling the contract. The outfit is operating on gas from the Home wells.

Other Operations

Sunlight Oils' No. 1, LSD 2, Section 4-19-2w5, rotary test, has spudded in. Union Drilling & Development Co. handling the contract. Mercury Oils' No. 1, LSD 13, Section 4-19-2w5, has 12½-inch casing run to 2,200 feet and is cleaning out the hole below that point. The hole was down 2,765 feet when caving caught the string of tools; and while fishing for these the 15½-inch casing parted at 1,500 feet. If the tools cannot be recovered, efforts will be made to sidetrack them. Mercury's No. 2, LSD 12, same section, is working on derrick. Miracle Oils' No. 1, LSD 11, same section, is rigging up for a rotary test. Union Drilling & Development Co., which is handling these contracts, has constructed a large reservoir connected with the various wells by pipe lines.

Structure Oil & Gas' No. 1, LSD 7, Section 31-19-2w5, is reported spudded in June 26.

Calmont Oils' No. 2, LSD 11, Section 20-19-2w5, is reported spudded. Calmont's No. 7 has been located in the same LSD. in the SW cor. of the Dallas lease, and has cellar dug.

In the central section of the Turner Valley Field, Okalta Oils' No. 2, LSD 8, Section 1-20-3w5, is working on derrick. Okalta's No. 5 is working on derrick in NE LSD 7, same section, offsetting Freeman-Lundy Syndicate's No. 1. Okalta's No. 6 will be located when rigs for these two wells are finished. Calmont's No. 3, LSD 2, Section 1-20-3w5, is rigging up.

Shareholders of Advance Oil Co. held their annual meeting recently at Calgary, when G. H. Bell of Calgary and R. A. Clancy of Montreal were added to the directorate. Old directors re-elected were: W. D. Lundy, president; E. A. Freeman, R. Taylor, J. H. McDonald and E. Moorehouse.

Structure Oil & Gas Co.'s No. 2, Section 12-20-3w5, has derrick up, and is reported installing machinery.

Most Easterly Test

Sentinel Oil Co.'s No. 1, Section 8-20-2w5, recently resumed after running 8¼-inch casing to 4,525 feet, and is reported drilling just off the depth of the old open hole, which was down about 4,650 feet. This test is, in relation to structure, the most easterly in the Turner Valley Field, being approximately 1¼ miles east of Royalite's No. 4. The latter test in the northwestern part of Section 7-20-2w5, got production in the deep lime at 3,740 feet, while further south and east British Dominion's No. 1 in the same section went to 6,600 feet without reaching the lime. Sentinel's No. 1 is still further east, and apparently located on a separate fold east of the main Turner Valley structure; so that results at this point may be interesting and are likely to throw a great deal of new light on geological conditions in the easterly part of the Turner Valley area. Sentinel's No. 1 started drilling in the upper River formation with 24-inch casing which was used to shut off surface water. The 20-inch was set at 200 feet, and 15-inch at 1,827 feet. A fair show of gas under heavy pressure, with traces of oil, was met at about 1,800 feet. Drilling deeper, 12½-inch was set at 3,434 feet, being the longest string of this size in the field. It shut off a flow at 2,800 feet, and several small oil seepages. The 10-inch was set at 4,436 feet, and drilling continued to 4,650 feet for 8¼-inch, when a prolonged shutdown occurred.

In the south end of the field, Pacalta Oils has located its No. 1 Turner Valley in LSD 7, Section 28-18-2w5, where the company holds 40 acres. Pacalta Oils, Ltd. was recently organized at Vancouver, British Columbia. Officers are: President, Frank Parsons; vice president, Dr. S. Bonnell; secretary-treasurer, W. S. Hynes; directors, P. H. Murphy and Charles C. Carter. The company also holds acreage in the north end of the Turner Valley, on the Highwood structure where it has a tentative location and in the Pincher Creek and Skiff areas.

Famous Oils, Ltd. has located its No. 2 test in LSD 3, Section 3-19-2w5, in the south end of the Turner Valley Field, and its No. 1 in LSD 10, Section 6-20-3w5, on the Waite Valley structure near Richfield Petroleum's No. 1 test. Officers are: President, John Shanks, Nordegg; vice president, Robert M. Young, Canmore; managing director, William R. Halpenny, Calgary; secretary-treasurer, D. G. MacKenzie, Calgary; directors, A. K. Leitch, Vancouver, British Columbia; Alex Morrison and Alfred F. Short, Coleman; Arthur M. Densmore, Lundbreck.

North End of Turner Valley

In the north end of the Turner Valley Field, Cameron Petroleums' No. 1, Section 36-20-3w5, is reported working on derrick. The company holds 3,000 acres on Alberta structures. Vanberta Oils, Ltd. of Calgary, has cellar dug for a test on the Black Diamond structure, north and west of the main Turner Valley fold. Roselite Oils' No. 1 is starting work 400 feet from the Vanberta location.

Vimy Oils' No. 1, LSD 7, Section 24-20-3w5, is reported drilling. Invader Oils' No. 1, LSD 10, Section 3-21-3w5, has derrick practically up. It is on the east crest of the east fold of the structure; the nearest producer is Foothills' No. 1, some 2¾ miles southeast but further west. This is the first drilling test north of the north branch of Sheep Creek since the old McDougall-Segur well, drilled 3 miles farther northwest, was abandoned in 1914. The latter was not carried to the lime horizon.

Angus Oils' No. 1, LSD 5, Section 3-21-4w5, is reported spudded in. Turner Basin Oils' No. 1, LSD 2, Section 27-20-3w5, has resumed drilling around 60 feet. Carl Olsen is field manager of this company, which is developing the old Stockmen Oils' acreage, and R. M. Davis and Jack Devaney of Oklahoma are handling the drilling. Vanalta Oils' No. 1, Section 34-20-3w5, has derrick up for a test to be drilled by Calmont Oils, Ltd. Dalfin Petroleums' No. 1, LSD 5, same section, is erecting derrick for a rotary test. Calmont Oils' No. 5, LSD 3, Section 34-20-3w5, is rigging up.

On the Highwood structure, southern foothills, Imperial's No. 1 Highwood, LSD 3, Section 36-18-3w5, is drilling in the deep lime at 4,293 feet. This test is being watched with interest, as the Highwood structure is the nearest southerly extension of the Turner Valley Field, and the south end of the Turner Valley Field looms as a big producing area. Imperial's No. 1 Highwood is being drilled on acreage of the Highwood Petroleum & Natural Gas Co. headed by A. W. Dingman, pioneer of the Turner Valley Field. Imperial geologists estimated the depth at which the lime would be encountered within 40 feet. Before the lime was struck the formation was a soft shale with bands of lime about 8 inches thick; it was standing almost vertical, necessitating the use of the diamond drill to keep a straight hole. The top of the lime was very hard. New hole is being made in the lime at a rate of 8 feet in 24 hours, so that the test should get the upper lime producing horizon about July 10. Lime samples so far have been nonporous.

In the Moose Mountain district, Kamorley Oils' No. 1 is reported spudding in.

Waite Valley

On the Waite Valley structure, Gibraltar Oils' No. 1 has been spotted, and the Neil McQueen Syndicate of Calgary has a location to the south. Stellar Oils' No. 1 has been located a mile north of the Norcon acreage. Buffalo Oils, Ltd., of Calgary, is planning to drill on the Waite Valley structure this summer.

Spartan Oil Co. has been organized at Calgary to drill on the Waite Valley structure, where it has subleased 1,340 acres from Stellar Oils, Ltd. Spartan's No. 1 has been located in LSD 2, Section 35-21-4w5, and will spud in August 1. Stanley J. Davies, consulting geologist, is in charge.

On the Ghost River structure, in the foothills area, Baymar Oils of Calgary and the Burr Syndicate of Vancouver, British Columbia, have arranged for building a road to their locations. Immediately the road is completed, work will be started on Baymar's No. 1, NW Section 5-26-6w5. The structure is about 8 miles north and west of the Banff Trail at the junction of the Bow and Ghost Rivers. Baymar Oils will drill on a tract of 1,080 acres secured from Hudson's Bay-Marland Oil Co. which holds 5,000 acres in the same area. Imperial Oil's No. 2 Bow River is a short distance south, on the Jumping Pound structure, and the Frontier Syndicate's Wildcat Hills well is drilling further east. Officers of Baymar Oils, Ltd., include: President and managing director, George H. Webster; directors, T. A. Hornibrook, F.

(Continued on Page 146)

Strongest Rotary CHAINS yet Developed

THESE Double Excess (XXS) chains (with excess strength and durability doubled) are made throughout of chrome nickel steel and heat treated, even the cotter pins. The bushings and pins are press fitted into the side bars.

The alloy steels and heat treatment assure greatest strength and wear values. The press fits increase durability and prevent wracking of parts.

Send for particulars on these new Howe Chains.

For Sale by Republic Supply Co.

HOWE CHAIN COMPANY, MUSKEGON, MICH.

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GENERAL OFFICES-HOUSTON, TEXAS

OIL AND GAS WELL SUPPLIES

ROTARY AND CABLE TOOLS

EQUIPMENT AND SUPPLIES

"AIRXPEL" STEAM TRAP OFFERS NEW FEATURES

The "Airxpel" steam trap, made by the Wright-Austin Co., Detroit, Mich., is offered in two forms, six regular or "master" sizes from one-half inch to 2-inch connection, and two "cub" sizes, one-half and three-quarter inch connections designed for installations where a very small trap is required. The large "master" sizes are made in semisteel for pressures up to 300 pounds and in cast steel for pressures up to 400 pounds. The "cub" sizes are for pressures up to 200 pounds. Strength, light weight and simplicity are features sought by the designers. The body and cover are of cast semisteel for pressures up to 300 pounds, and of cast steel for pressures up to 400 pounds. The bucket is of copper, the valve and seat are of monel metal, and all other parts of steam bronze.

The valve and seat are reversible, giving extra life to these parts and the valve holder has spiral vanes on its side, which rotate the valve during each discharge of condensation. This keeps the valve reground and steam tight. The valve stem, lever and lever stem with the bucket attached constitute the entire mechanism of the trap, apart from the valve.

JOINS PITTSBURGH EQUITABLE

J. H. Baker is now with the Pittsburgh Equitable Meter Co. with headquarters in its Tulsa office. Mr. Baker took an engineering course at Rensselaer Polytechnical Institute, Troy, N. Y. Upon leaving school he was for several years with the Chapman Valve Co. as salesman in the Mid-Continent district.

After joining the sales force of Pittsburgh Equitable, Mr. Baker spent several months in the company's main office and plants in Pittsburgh, where he studied the manufacture and construction of gas regulators and appliances, gas, water, gasoline and oil meters.

BUILDING IS GAS-WELDED

Oxy-acetylene welding is being used exclusively for fabricating and erecting the 300 tons of structural steel required for the framework of the Research Building now under construction at the Niagara Falls plant of the Union Carbide Co. This is a mill-type structure with a single aisle and mezzanine operating floors, 75 feet wide by 260 feet long and 42 feet 5 inches to lower chord of the trusses. A full-span, 10-ton traveling crane runs the entire length of the building. This is the largest gas-welded structure.

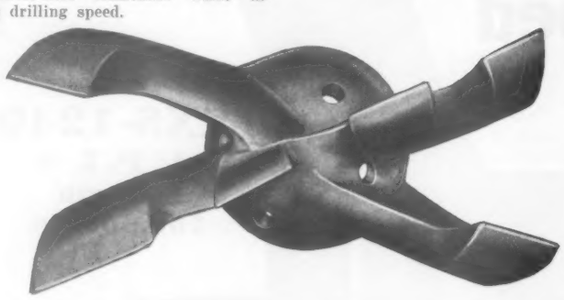
UNION CHAIN WIDENS FIELD

The Union Chain & Manufacturing Co., Sandusky, Ohio, manufacturer of power transmission, elevating and conveying chains, has announced the appointment of R. C. Brand as director of sales in the oil industry. Mr. Brand has spent more than 10 years in direct contact with the industry, acquiring an intimate knowledge of its requirements. He will be located in Sandusky and will concentrate his efforts on the new Union A.P.I. chain recently developed by the company.

SMITH DEMOUNTABLE DRILLING BIT HAS NEW FEATURES

An addition to the lines of tools manufactured by the H. C. Smith Manufacturing Co., Inc., of Los Nietos, Calif., is announced with the introduction of the Type "C" demountable drilling bit. This latest product of the Smith company is the result of research on the part of staff engineers to produce a drilling bit that would meet the requirements of new drilling conditions. The new bit incorporates the serrated features of construction which have distinguished other Smith drilling bits. Several new features, pertaining to blade and tooth position, have been added. The bit is of the X type. Secondary, or gauge blades, are set immediately behind the cutting blades.

Tests are said to have demonstrated that the new features of construction decrease frictional resistance while increasing drilling speed.



PORTABLE TOLEDO PIPE MACHINE NOW ON THE MARKET

A new Toledo power pipe machine, small, compact and portable, is announced by the Toledo Pipe Threading Machine Co., Toledo, Ohio. It is designated as No. 999 and is a half-inch to 2-inch machine.

Fitted with a specially designed cutting head containing four knives cutting simultaneously, 2-inch pipe is cut off in 15 seconds, threaded in 30 seconds, and other sizes in proportion, according to the manufacturer. The die-heads are changed instantly from one size to another and the dies are easily reground when dull. The reversible, ball-bearing motor operates from a lamp socket. The oil pump is built into the machine and is positive in action. A safety friction gear protects the machine if overloaded. All control is centralized in the motor switch.

LINDE PLANT IN JACKSONVILLE

A new oxygen producing plant in Jacksonville, Fla., has been added to the chain of the Linde Air Products Co., New York. E. H. Blount is superintendent of the plant. J. Erskine, Birmingham, Ala., is district superintendent. The company's new plant in Louisville, Ky., has started producing oxygen to supply the local demand.

MANAGING PUMP DEPARTMENT

F. H. Hayes, formerly special representative in Tulsa of the Prescott Co., Menominee, Mich., manufacturer of pumping and sawmill machinery, has been made manager of the company's pump department. His headquarters now are in Menominee.

OPENS SHOP AT CAPITOL HILL

The Central Tool Co., with offices in the Colcord Building, Oklahoma City, and a shop in Shawnee, Okla., has put into operation a shop at Capitol Hill for the Oklahoma City Field. This new shop, under the supervision of R. A. Painter, is equipped for rotary and cable tool repair work, with forging hammers, electric welders and pipe machines for cutting pipe from 15½ inches down.

AMOS IN CHARGE OF SALES

Direction of the sales and service division of the Pyle-National Co., Chicago, has been placed in the hands of J. A. Amos, whose title is vice president in charge of sales and service. George E. Haas is assistant to Mr. Amos.

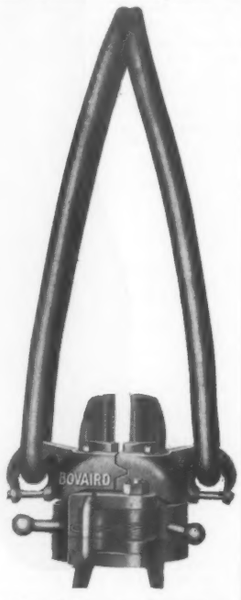
GAUGE SHOWS WEIGHT AND LOAD CONDITIONS

The dependence which the driller is placing upon the automatic recording weight indicator for the determination of derrick and line loads, bit pressures and other load and weight conditions in drilling has been growing within the past few years. Especially is this true with regard to fishing operations for determining the depths to the top of the fish and indicating when the fish has been caught.

For fishing operations where light pickups are made and where other conditions may demand the indication of small weight variations a greater needle movement was desired. After a series of experiments and field tests the Martin-Loomis Corp., Long Beach, Calif., has produced the Vernier gauge. One complete revolution of the Vernier needle shows 20 pounds hydraulic pressure on the diaphragm unit. The dial face is 12 inches in diameter and is sharply engraved so that it is readily readable from the driller's position in the derrick. With this gauge, an operator can determine weight variations as low as 50 pounds. Pickups of bits or small drill collars or other similar fish can be determined from the gauge.

WITHSTANDS SEVERE TEST

The Bovaird split slip-type tubing elevator, manufactured by the Bovaird Supply Co., Tulsa, was subjected to severe



tests before being placed on the market. In testing for strength a piece of 2-inch 4.70-pound seamless tubing was pulled in two under a load of 117,842 pounds. Then a solid bar was substituted for tubing and the load increased to 150,000 pounds without injury to the elevator.

O. C. S. CO. BUYS AIRPLANE

A Stinson four-passenger airplane, equipped with a 220-horsepower Wright Whirlwind motor, has been bought by the Oil Country Specialties Manufacturing Co. for use in its business. The company's plant in Coffeyville, Kans., is centrally located in the Mid-Continent Field, making it possible for an airplane to give sales service or engineering assistance within a few hours. The company's offices and plants at Coffeyville, Tulsa, Sweetwater, Tex., and Hynes, Calif., are now only 28 hours apart.

Modern Drilling Requirements make their use imperative!

H. C. Smith Type "C" Coring Outfit

H. C. Smith Type "B" Demountable Drilling Bit

The H. C. Smith Type "C" Coring Outfit provides you with the underground facts which enable efficient, successful drilling operations. The H. C. Smith Type "B" Demountable Drilling Bit provides the means for making hole faster, more economically, and with a higher factor of safety.

The H. C. Smith Type "C" Coring Outfit

Takes perfect cores in any formation that a regular disc, fishtail or 4-way bit will penetrate. For extremely hard formations, bits are set with a diamond substitute metal. Renewable cutterheads, economically replaced when dull, eliminate expense and trouble of rebuilding. Clean, well formed cores insured by circulation close to cutter teeth. All four blades cut to same gauge and keep hole out to gauge. Made of high-carbon steel—extra strong—light in weight.

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Economics of Conservation Problem

Professor Lilley Concludes His Series of Articles on Stabilization of the Oil Industry and States Conclusions

By Ernest R. Lilley
Associate Professor of Geology at New York University

The problems of stabilization and conservation are of vital importance to the oil business. They are of equal importance to the individual states and to the nation as a whole. The business of producing crude oil and converting it into the products demanded by consumers is no longer the property of a few individuals. Because of the wide distribution of the stocks and bonds of the larger corporations, citizens in every hamlet of every state in the union have a stake in the oil business and are personally concerned in its well-being. The sales and profits of distributors and retailers of gasoline, lubricating oils, and other products of the oil refinery are materially affected by the violent and sudden changes in the prices for these substances resulting from inability of the oil industry to maintain a balance between supply and demand.

The continuance of the growth of the automobile industry and the development of the domestic oil burner depend upon the ability of the oil industry to supply them with gasoline and furnace oils. With the registration of automobiles, trucks, and buses well past 23,000,000, there are few families in the United States that do not have a personal interest in the industry that supplies them with gasoline. Undoubtedly the great majority of the automobiles are owned by individuals who use them solely for pleasure. Failure of the supply of gasoline would not affect them in the same way as it would the retailers of gasoline or the manufacturers of automobiles and domestic burners. Yet it would deprive them of pleasures that they have come to consider as rightfully belonging to them. In brief the problems of the oil industry are the problems of the country as a whole as much as they are the problems of the industry itself.

Public Interest

Because of this there is every reason to expect that the people of the country will be willing to meet the oil industry halfway in any efforts that it may make toward stabilizing conditions in the industry and conserving the oil resources of the country. However, that does not mean that the public or its agents, the courts, will give unqualified approval of any individual plan that is proposed by oil operators or scheme of operation that is put into use by them. Public approval of plans for the conservation of our oil resources and the stabilization of the industry cannot be expected until those plans prove that they can stand the test of reasonableness.

The public is as vitally interested in the problems of overproduction and waste as the oil operator. However, despite the wide distribution of the stocks and bonds of its corporations and the number of the distributors and retailers of oil products, the interest of the public is primarily that of the consumer and not that of the producer or seller. It is in many respects diametrically opposed to the interest of the oil industry, the producer or seller. To the oil operator, the word stabilization means a chance to produce oil that can be sold at prices that will yield him a greater profit than he is now able to make. In other words, the producer or refiner expects stabilization to bring better returns to him by doing away with the low prices that accompany overproduction. The public, on the other hand, is primarily interested in the continuance of its supplies of cheap oils. To it, stabilization is likely to mean the removal of those periods of high prices that occur every time production falls below consumption or the visible supplies of oil appear to be insufficient to meet the anticipated demand.

Special Problems

No plan of stabilization coming from the oil business that fails to allow for this basic difference in the viewpoints of oil operators and the public will have much chance of success. At the same time the files of our newspapers, magazines, and legislative records give adequate proof that the nation as a whole is fully alive to the special problems that confront the oil industry because of the nature of its deposits and the rapidity of the expansion of the demand for its products. The oil industry has good reason to expect that the people will allow it greater leeway in the solution of the problem of overproduction and waste than would be allowed to an industry in which the possibilities of the exhaustion of its raw material were less evident. On the other hand, the enormous quantities of oil that have been added to our known reserves by the discoveries of the past few years, the extent of areas remaining to be tested with modern equipment, the growing efficiency of special recovery methods, and the extent to which our production is being supplemented by oils from South America, all serve to remove the fear of a shortage of oil from the mind of the average citizen and to bring him to the feeling that there is little to distinguish the oil industry from other industries and to warrant giving it special consideration.

Plans for Stabilization

Plans for stabilization may be considered as falling into four groups, each group corresponding with one of the four major divisions of the oil business. Thus we have for consideration plans calling for changes in procedure or co-operative action in the producing, the crude oil marketing and transportation, the refining, or the refined oil marketing divisions.

The aim of every retailer or distributor of petroleum products is identical with the aims of similar individuals handling other types of commodities, to purchase at the lowest prices possible and to sell the greatest possible quantity at the highest price that the market will stand. From the margin between the purchase price and the selling price he must pay all of his expenses before he can secure a profit. Regardless of the exact nature of the business of any particular individual, he always faces expenses for handling, interest charges on the capital invested, depreciation on the equipment in use, and interest on other storage charges on the materials that he carries in stock. It is clear that the net profits accruing to an individual may be increased if he can materially increase the quantity of his sales and the rate of turnover of his stock without adding to his investment. Thus it may even prove profitable to cut the price of the individual product to the consumer if the total number of sales can be increased by so doing. On the other hand it is sometimes possible for the retailer to secure greater ultimate profits by increasing the price of his commodity even though the number of sales is reduced somewhat.

Question of Price

No one will question the right of the individual to determine the price at which he will sell an article of trade. He is the sole judge as to whether he prefers to sell his articles at the prices offered or to hold them with the view of securing better prices at a later time. Thus, during periods of overproduction and low prices, distributors and retailers have a perfect right as individuals to withhold oils from the markets until prices move to higher levels. However, such action tends to cut off the only source of income that the individual business of distributing or retailing can have until selling is resumed. The holding of oil under such circumstances can only be considered as sound business if there is good reason to anticipate an early increase in prices that will compensate for the period of no income and heavy carrying charges.

The oil business of the United States has now reached such proportions that it is improbable that the action of one distributor, no matter how large, would be sufficient to materially hasten the return of the higher prices desired. On the other hand, similar action by the greater portion of the distributors and retailers of the country would tend to bring a material change in the situation. The duration of the period of improved prices that might be anticipated would depend upon the further actions of the distributors and their relations to the rest of the oil industry.

Effect of Price Change

The first improvement in prices would bring increased sales from those who were least able to carry the burden of heavy stocks and force others to hold their oils for longer periods if the desired price levels were to be reached. The logical move under these circumstances is the attempt to organize all of the distributors who are attempting to hold up prices and to hold back their oils and to induce those who are weakening to work with them. The possibility of such an organization accomplishing the purpose for which it was formed depends upon its ability to enroll all of the distributors of oil products and upon the support given to it by each individual. Consumers will naturally tend to patronize those retailers who do not belong to the organization and are willing to sell at prices under those set by that group. If the industry were a relatively small one, the possibilities of enrolling all of the distributors in such an organization would be good. However, the size of the oil business, the number and wide distribution of its members, and the diversity of their interests place mechanical difficulties in the way of such an organization that appear to be insurmountable.

Assuming that the greater part of the distributors can be enrolled in such an organization, what support can they be expected to give to its activities? If the record of such movements in other industries and of the earlier days of the oil business is any indication, the support given on the day upon which the organization is formed will be greater than the support that will be given it at any time following that. In general it is possible to say that the strength of such movements, if they involve any considerable number of individuals or organizations, is inversely proportional to the length of the period during which the activities of the members are subject to restriction. The increasing business and profits of those who refused to enter the organization and are not bound by its restrictions serve to create a feeling of dissatisfaction. This may result either in open refusal of members to abide by its rulings or quiet evasion of them in the interests of personal gain.

New Outlets

If the organization were called upon to function only long enough to permit the consumption of stocks above ground, its chances of success would be good. However, no action taken by distributors other than refusal to purchase the products of the producer and the refiner unless they are offered at prices less than cost will check the steady addition of new oils to those already in storage. Such refusal will tend to decrease the burden of carrying charges born by the distributors in the organization. However, it will at the same time force the producers and refiners to seek new outlets. The artificial level of prices maintained by the restrictive measures of the organization together with the low prices asked by refiners with an abundance of unsold products gives those not in the organization a chance to make unusual profits and serves to increase the defection of its weaker members and encourage the entrance of new concerns into the business of distributing oils. The only alternative is that of purchase of all of the oils offered by refiners regardless of whether the distributors in the organization have any expectations of selling them to the ultimate consumers in the immediate future or not.

Case of Distributors

Any move of this type is in direct opposition to the law of supply and demand. It may meet with a measure of temporary success but it cannot give permanent relief unless there is a change in the basic controlling factor, the ratio of production to consumption. The activities of distributors may serve to increase the demand for their products and their example may tend to cause producers and refiners to restrict their operations. However, the distributor cannot be considered as having the power to alter materially the ratio between production and consumption without co-operation from the other branches of the oil business. Working alone, he soon finds himself in a position comparable with that of the circus rider attempting to maintain his balance with one foot resting on the back of one horse and the other on the back of a second. He may circle the circus ring two or three times without difficulty, but on the fourth the horses become frightened, diverge from their paths, and force him to abandon his position.

Assuming that the distributors through the investment of large amounts of capital were able to maintain prices at artificial levels profitable for themselves, what of the attitude of the public in general? The Sherman antitrust law was passed in 1890 because of the activities of large corporations in attempting to secure larger profits through combinations restraining competition. The number of cases in which the courts have affirmed the right of the people of the nation to protect themselves from the actions of a group is an impressive one.

Greater Leeway

During recent years there has been a definite tendency toward the giving of greater leeway to individuals and corporations in the conduct of their business. Co-operative efforts within individual industries have received considerable encouragement from the states and the National Government. However, such encouragement has been limited to efforts which showed promise of improving the general welfare of the people as a whole as well as the stability and profits of the industry concerned. There is no reason to anticipate that the courts or the legislatures will be any more lenient with organizations whose activities result only in gains to themselves than they were 20 years ago. Because of the possibility of the early exhaustion of the oil resources of the country, the courts might be inclined to permit the continuance of some combinations restraining the activities of

This is the eighth and concluding article in a series written especially for The Oil and Gas Journal by Ernest R. Lilley, Sc. D., associate professor of geology at New York University, leader of the oil executives' course at the Wall Street division of the university, and author of "The Oil Industry" and "The Geology of Petroleum and Natural Gas."

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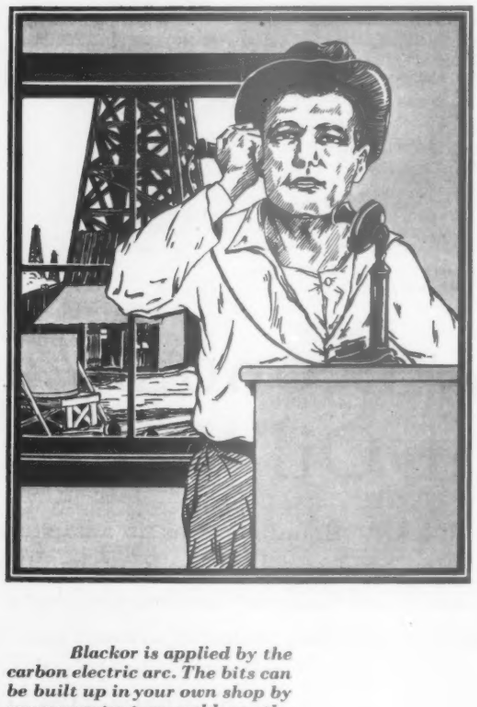

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the oil industry if they tended to further the cause of conservation. However, it is difficult to see how a combination of distributors and retailers having only a limited control over the manner of consumption and no direct control over the business of producing and refining could claim that their efforts would result in conservation of the resources of the country.

Position of Refiners

To a considerable extent the position of the refiners is similar to that of the distributor. One point of difference should be noted. The refiner can to a considerable extent, through application of the knowledge of the nature of oils and their refining that he now possesses, determine the character and percentage of the different products that he will produce. Thus the refiner of today is able to increase his production of gasoline by the use of cracking units. He is able to produce products acceptable to the market from sour crudes by subjecting them to special methods of treatment. On the other hand he is not compelled to use such methods if he feels that the condition of the market for those particular products does not warrant the expense of producing them. Except in the high grade oil districts of the Appalachian Field there are few refineries that make a practice of producing lubricating oils from all of the crude oil processed. The explanation is simple. The market is not capable of absorbing all of the lubricants that could be produced. Therefore, refiners install only the equipment needed to produce the quantity of lubricants that they feel there is a reasonable chance of selling. The heavy fractions produced in excess of the capacity of this equipment are sold as fuel oils or cracked for the production of additional gasoline.

Fuel Oil Surplus

Throughout the early history of the oil business the refiner worked mainly to increase his percentage of kerosene. Today his most important product is gasoline. Whereas 10 years ago practically all of the gasoline coming on the market was straightrun gasoline, the rapid expansion in the demand for this product has encouraged refiners to install cracking equipment to the extent that nearly one-third of the gasoline now reaching the market is of the cracked type. Without this rapid increase in cracking facilities and its consequent increase in the percentage of gasoline produced per barrel of crude run, the producers would have been called upon to supply a vastly larger amount of crude oil if the expansion of the use of the automobile were to continue without hindrance. This would have created a surplus of by-product fuel oil far in excess of the amount that the industry is now producing.

Through the development of cracking on so large a scale the refiners have to some extent freed themselves from the effects of minor fluctuations in the supply of crude oils and the rate of consumption of gasoline. When the prices of crude oils are high or demand for gasoline is in excess of the supply, cracking units may be run at capacity. On the other hand, when crude prices are low and there is danger of overproduction of gasoline, the cracking units may be shut down. However, shutting down of cracking units unless accompanied by the shutting down of complete refineries as well tends to increase the amount of oil that must be sold as fuel oil.

Overproduction

Unless the period of overproduction is one of short duration, the price structure of the fuel oil market becomes undermined because of this additional burden. Even though the efforts of the refiners to maintain higher prices for gasoline through the reduction of the supply of that product appear to be entirely successful, the creation of a surplus of fuel oils and the weakening of the prices of that product introduce elements of weakness. Cracking units, though shut down, are subject to heavy charges for interest, depreciation, and obsolescence. The widening margin between the cost of the fuel oil and the price of gasoline caused by the lowering of the prices for the former tend to create a situation in which the weaker refiner cannot afford to keep his cracking units in idleness. He may not be able to make a profit through their operation, but it is good business for him to operate if in so doing he can reduce the amount of his loss.

The number of refiners has always been much smaller than the number of producers. Their business has always been one in which the economic principles found to function in other industries could be applied more readily than they could be to the work of the producer. The absence of the element of chance that plays so important a role in the activities of the producer served to make refiners more careful observers of the condition affecting their operations. Thus refiners have fared much better on the average than producers during periods of overproduction, frequently being able to regulate their operations so as to maintain prices until they were able to liquidate their high priced stock. During the earlier years of the oil business, combinations of refiners attained some success in attempts to control the market for refined oils. However, none of these attempts to boost prices was successful for more than a few months. In every case the efforts of the refiners to extend such periods failed because of their inability to restrict the production of crude oil.

Difficulties in Curtailment

The same condition exists today. Shutting down of plants representing investments of thousands or even millions of dollars results in tremendous overhead losses. Even reduction of runs to percentages less than capacity brings reduced income. Refusal to sell refined oils at prices below those of an artificial standard or to buy all of the crude oils that are offered by producers lead to the entrance of new refiners into the field. The weaker members of combinations organized to stabilize the market throw over their allegiance and attempt to swell their own profits by operating at higher rates than those allowed. Without the shutting down of plants refiners attempting to maintain prices are forced to finance the holding of large amounts of oil products for indefinite periods.

Except in the fact that he is able to adapt his operations to the needs of the market through cracking and other improvements in refining, the position of the refiner is not materially different from that of the marketer. He is better able to meet the problems arising from seasonal fluctuations in demand or short periods of overproduction than the producer is, but cannot effect permanent stabilization through his own efforts. Combined together with other refiners he may be able to secure temporary profits for himself but such combinations are subject to all of the difficulties that assail those of the marketers. If such combinations should result in continued refusals to utilize cracking equipment even when that equipment could be operated at a profit in order to limit the supply of gasoline, they would be subject to the additional accusation of being opposed to the principles of conservation and of wasting the resources of the country.

Pipe Lines

Prior to 1915 the pipe lines were directly controlled by the purchasing companies. Their policies were identical. Despite the fact that most of the pipe line companies have declared themselves common carriers and have separated their activities from those of the purchasing companies as far as the law is concerned, economic necessity forces them to remain closely associated in their policies. In the majority of cases the pipe line companies and the purchasing companies are either subsidiaries of a parent holding company or are controlled by the same group of stockholders. It is evident that the pipe line company must run oil through its lines to secure a profit. Because of the nature of the substance handled, it must operate in perfect harmony with those that have oil to ship. While individual producers may at times be able to provide large amounts of oil for shipment, the pipe line company must

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Fig. 460
Rising Stem "Pilot" Gate Valve

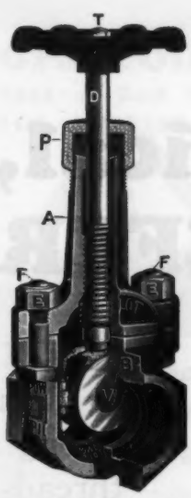

Fig. 460—Sectional

Fig. 478
O.S.Y. "Pilot" Gate Valve

The stem is furnished with machined full length acme threads. Note that all threads in the bonnet are engaged in the closing or critical "wear" point of the valve.

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depend upon the large purchasing companies for steady offerings. Its activities are thus subordinated to the activities of the purchasing organizations with which it has the closest bonds.

The purchasing companies were originally merely the buying agents for the refineries. Except in the case of the Prairie Oil & Gas Co., this is still their main function. However, all of the purchasing companies serve also as brokers of crude oil, being perfectly willing to sell crude oil to companies other than the refining organizations with which they are most closely linked if the prices offered are acceptable. During the period when the Standard organization controlled practically all of the refineries of any importance in the United States, the purchasing organization was solely a purchasing agent for it. Today, the number of refineries bidding for crude oil in the open market gives the purchasing concern a position of much greater importance.

Purchasing Organizations

The business of the purchasing organization and its associated pipe lines is comparatively simple. It consists of buying oil from individual producers, gathering that oil together until the quantities which the refiners require have been accumulated, and selling and delivering that oil to the refiners. Like all other middlemen it must keep a stock of goods on hand to meet the demands of refiners when those demands are made or it will lose its business to those who do. The nature of the business also demands that the purchasing company take advantage of every chance of securing oil at prices below its normal value. At the same time it must keep on good terms with those who sell oil to it just as much as it must keep on good terms with its customers. Refusal to take the oil of a producer during a period of overproduction creates a feeling of antagonism that may make it impossible for the purchaser to secure oil during periods when his customers need it. At the same time refusal to purchase oil during a period of overproduction may place the purchaser in the position of being unable to compete with those who did purchase cheap oil when the period of overproduction has passed.

The bogey of immediate exhaustion of our oil resources has played an important part in the policies of purchasing companies ever since the days when Pennsylvania was in its prime. At no time in the history of the oil business in the United States has settled production been sufficient to meet the needs of the market. Failure to discover new pools would have created a shortage of oil in a very few months. Today the situation is somewhat different from what it has been in the past because of the unusually large amount of shut-in production. However, even this would not serve to supply the needs of the country at our present rate of consumption for any great length of time.

Price Fluctuations

Even though the threatened shortage of crude oil has failed to appear up to the present, the variations in the rate of discovery and development of new pools have been sufficient to bring periods of higher prices and profits to those who purchased oil during periods of overproduction and held their stocks until those periods had passed. There is no question but that the purchasing companies would fare much better if the wide fluctuations in crude oil production and prices could be avoided. The cost of storing millions of barrels of oil is an item of no small proportions. The price at which that oil is finally sold is seldom commensurate with the risks taken in placing it in storage. However, the purchasing company occupies the unenviable position of the intermediary between two groups, the refiners and the producers, whose interests are widely divergent. Moreover, one of these groups, the producers, has not yet fully demonstrated ability to regulate its rate of operations even when overproduction threatens.

Purchasing companies have through unstinted use of their capital and credit been able to maintain prices through periods of overproduction of short duration. However, though the price cut, the proration order, and the refusal to purchase and connect up to new wells, all tend to make the producer discontented, continued overproduction forces the purchaser to make use of these methods of self protection.

Storage Problems

The business of purchasing crude oil is concentrated in the hands of a relatively small number of companies. Their interests are much the same. The nature of their business brings them into active competition with one another in every new section that is opened up. The heavy stocks of crude oil that they carry at all times make them most unwilling to lower prices. Yet the continuance of excessive offerings of crude oil on the part of producers and the lack of a market to absorb the oil purchased must eventually force the purchaser to recognize that refusal to obey the law of supply and demand can only result in the creation of a more unhealthy situation than before. Stocks of crude oil represent a per barrel investment which is substantially less than the investment in a barrel of refined stocks. It is logical for the oil industry to attempt to maintain a condition of stabilization by storing crude during periods of overproduction rather than by storing refined oils. However, the history of the business shows that unless prices of crude are cut to the point where producers shut down their drills, the storage of crude oil merely adds to the burden carried by the industry and makes the reaction more severe when it does come.

No Monopoly Possible

Marketers, refiners, and purchasers are able to help in maintaining stable conditions throughout short periods. No move on the part of any of these groups, even though it resulted in the development of a combination whose activities were clearly opposed to the interests of the public at large and the creation of monopolistic control, could maintain those conditions for any length of time if the producers continued to produce crude oil in excess of the ability of the market to consume it. The problem of stabilization in the last analysis is a problem that only the producers of crude oil can solve. Let us now consider the nature of the methods that may be proposed to meet it.

Actions on the part of producers may be divided into two types, those taken before the oil is brought to the surface, and those taken after the oil has been taken from the well. Actions under the latter heading are similar to those that may be taken by purchasers of crude oil. The producer who is unable to secure a satisfactory price from purchasing concerns may refuse to sell and begin to store the oil that he produces with the purpose of holding it until prices improve. He may in some cases attempt to sell his product directly to some of the smaller refineries. If his production is sufficiently large and he has sufficient capital, he may enter the business of refining. Many of the refineries now operating were built under such conditions. The producer who turns refiner enjoys marked advantages over the purchaser and refiner combination for some time at least. His plant is built solely with the view of producing the products for which there is an immediate market. He has made no large expenditures for storage facilities and equipment that is not usable under the conditions existing and his balance sheet shows no drastic reductions in inventory because of decreases in the value of crude oil bought at high prices.

On Competitive Level

However, his improved status does not better the condition of the industry as a whole. In fact his improved status seldom lasts long. Unless he is lucky enough to own or have access to the flush production of successively discoverer pools, he soons finds that the decline of his wells forces him to go into the market and purchase oil in competition with the purchasing concerns or purchase from them. His status becomes identical with that of any number of other refiners. At the same time the oil

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products that he has been able to sell at prices under those of the older refiners tend to extend the condition of oversupply to the refined oil trade and to bring about reductions in the prices of the products upon which he is depending for his profits. With increasing costs and diminishing returns he is forced either to shut down or to develop his organization to the point where it can operate with the efficiency of the older refiners. In so far as his refinery investment is concerned, his outlook upon the oil industry is identical with that of any other refiner. If he acts quickly enough, he may be able to secure a very substantial profit to himself before that condition is reached; but his action cannot be considered as bringing greater stability to the industry as a whole. If the same action were taken simultaneously by any large number of producers, the results would be disastrous to all, the added investment in refining and refining facilities serving merely to convert a surplus of crude into a surplus of refined oils and to create a refining capacity far beyond the needs of the market.

Expense of Storage

The producer who places his production in storage insures himself against the possibility of drainage from below his leases. However, the outlay for tanks may prove to be an item of no small proportions. Unless the tanks are located at points where they will be of use for the handling of the production of later discoveries, their value after the period of overproduction has passed will be only a very small portion of their original cost. Leakage, insurance, evaporation, and interest on the money tied up in tanks and in oil, all add to the burden of carrying the oil.

It is evident that the producer cannot afford to store oil for long periods even if he has the capital needed for storing it unless there is a good chance that the price of oil will rise very considerably. If the period of overproduction is relatively short and the rebound of prices a large one, substantial profits may be made. Undoubtedly the storage of oil on the part of producers serves to stabilize the market to some extent. Such action serves to relieve the burden on the purchasing companies who are just as much interested in maintaining prices of crude as the producers. However, the maintenance of price levels by such means does not discourage the activities of wildcatters to the degree that they would be discouraged if the oil produced had been thrown on the market for whatever it would bring. If the wildcatters are unsuccessful and no new pools are discovered, the value of the stored oil increases to the point where the venture may be called a success. If new pools are discovered, the selling of the oil must be postponed indefinitely if a profit is to be made. Yet with every postponement the chance of making a profit becomes less because of the steadily mounting investment in carrying charges. Sooner or later the oil which has been withheld from the market must be sold regardless of whether the sale is made at a profit or not.

Overproduction Chronic

During every period in which overproduction has assumed major proportions, "build a tank" movements have sprung up. Those urging such action appear to have been confident that overproduction was a temporary condition that would soon pass by. However, the history of the oil industry from Oil Creek to Seminole and West Texas shows that overproduction is a chronic ailment. Unless the industry is now operating under conditions that are basically different from those under which it has operated since 1859, there is little chance of the producer making profits on oils that are held in storage for periods of more than a year or two. While the record of the past few years does not indicate it, the chances of the discovery of new highly productive flush pools in the United States are steadily decreasing. However, the development of producing areas outside of this country is proceeding at a pace that guarantees that the market will be supplied with its needs without difficulty for the next few years as long as the channels of supply are not interfered with by some such unforeseen possibility as war. Storage of oil during periods of local overproduction is in keeping with sound business policies, but the danger that local overproduction may grow into national overproduction because of similar actions on the part of other producers facing similar conditions in other localities should serve to deter producers from placing too much faith in the effectiveness of storage programs as a means of stabilization.

Shut-in Production

The alternative to storing and withholding from the market the oil that has been brought to the surface is to keep it in the ground in the original reservoir until the period of overproduction has passed. The problems of producers attempting to do this may be considered under two headings; those of the producers who have largely completed the development of their properties, and those of operators who are just beginning the development of properties on which discoveries have been made. Let us consider the problems of the producers in the first group.

It is evident that the storage of oil in the horizon in which it has been held for millions of years before its discovery by man is the safest storage that can be devised. Losses from evaporation, leakage and fire are not to be feared. The producer using this type of storage does not have to construct costly tanks or concrete reservoirs. He has no depreciation charges on such construction. He does not have to worry about the interest charges on his investment in tanks. In fact he does not even have to advance the money to cover the cost of lifting the oil to the surface. Assuming that the producer had complete control of an oil containing structure it would appear that he would be in the position to shut down and patiently wait until the price of oil reached the point that he considered fair.

Anglo-Persian Example

At first sight it would appear that the logical policy for every producer who has no reason to fear drainage of oil from beneath his properties would be that of completely shutting down all pumping or even flowing wells until the period of overproduction had passed. If this were entirely true, some of the most prominent and successful of the world's producers of oil have been guilty of poor business acumen. The Anglo-Persian Oil Co. is in complete control of the productive lands of southwestern Persia. Fear of drainage plays no part in its calculations regarding its rate of producing oil. Yet its production of oil in 1927 was approximately 1,000,000 bbls. greater than it was in 1926 despite the great drop in prices that occurred in 1927. The production in the Dutch East Indies, where the bulk of the oil is secured from wells controlled by the Royal Dutch-Shell organization and from pools where offsetting is unknown, was approximately the same in 1927 as it was in 1926. The production of the Tropical Oil Co. in Colombia was more than doubled in the same period despite the abundance of low priced oil on the Atlantic Seaboard and the absence of any competitive operations near the company's properties.

It does not appear that the production of Luling Pool was materially less than would have been expected from its normal rate of decline. Yet the value of its oil fell with the general price declines of 1927. As practically all of the producing area was controlled by the Magnolia Oil Co., the continuance of production cannot be traced to fear of drainage. Conditions were practically the same at Rainbow Bend in Kansas, where the pool was operated jointly by three large companies. Although the rate of drilling of new locations was kept down, the two allied companies operating the Big Lake Pool in West Texas continued to produce a substantial amount of oil all through the period of overproduction. At Salt Creek, Wyoming, the Midwest interests, who control or direct the operations on the bulk of the leases in that pool,

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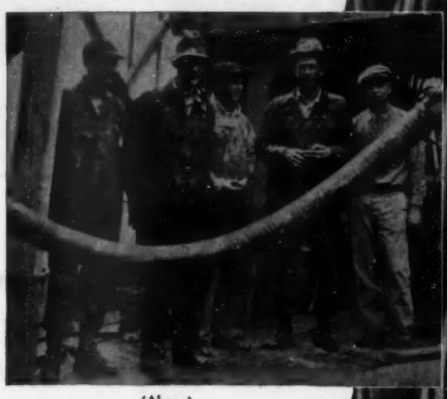

(Above)
Dailey Markham Drilling Co., rig on Harjoshie No. 4, Gypsy Oil Co., Mission Pool, using 1" x 1250' Hazard Olympic Rotary line. Also the second well for this line.
Earl Bridges, Driller — M. L. Beaver, Roughneck
J. G. Copeland, Roughneck — Tom Riley, Roughneck
Jack Campbell, Roughneck

(Below)
One of Mead Bros., rigs on J Neal No. 4, Minnehoma Oil & Gas Co., in the Mission pool, using a 1" x 1250' Hazard Olympic Rotary line. This is the second well for this line.
Jean Lambert, Driller — J. E. Jones, Roughneck
Fred Velvin, Roughneck — C. A. Sneed, Roughneck

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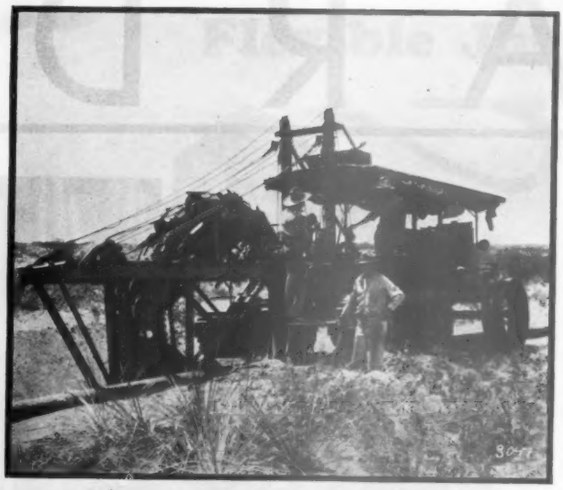

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made no effort to bring lower horizons to production; but oil was secured steadily from those that had already been developed.

Continued Production

Every one of the companies involved in these areas was in the hands of executives whose experience would warrant the feeling that their action in continuing production must have been determined on sound business principles. Most of the executives of these and other similarly placed oil companies had watched the industry pass through periods of overproduction before. Their acquaintance with such periods had undoubtedly proven to them that overproduction may last for a long time; and that, though it may appear to be overcome, it always comes back again after short intervals of higher prices and comparative scarcity of oil. Judging from the history of the oil business of the past 70 years in America, the producer who postpones producing his oil in order to secure the benefits of permanently higher prices has many years to wait.

In days when the bonus paid for a lease may run into hundreds of thousands of dollars and the individual well costing more than $100,000 is no longer rare, the fully drilled and equipped lease represents a very substantial investment. In foreign countries the development expense may include the building of long pipe lines to handle the crude and the construction of small towns to house the workers. After the money has been consumed in development costs, it is not available to the operator until the oil has been produced and sold. It follows that any scheme that calls for the retarding of the bringing of the oil to the surface serves to lengthen the period during which the money invested in the property remains tied up. If the property is shut down completely, that money is earning nothing. In as much as the same money, if available for other purposes, could have earned more money, the operator is suffering a distinct loss. It follows that, even though an operator be in absolute control of a given pool, he cannot shut down production in that pool for more than a few months without sustaining a loss to himself. If part of the development expense has been paid for by bonds or other forms of loans, it becomes necessary for him to operate to secure the money to pay the interest on them.

May Vary Production

While the record of the past few years indicates very clearly that operators cannot shut down completely for any length of time even when the pools that they have developed are controlled entirely by themselves, it also shows with equal clearness that such operators may vary their production to meet their desires to a very considerable degree. In many instances it is possible to restrict production to the point where the income from the sale of oil is just equal to the overhead charges on the investment. In such a case the producer postpones the date of amortization of his investment but avoids the necessity of supplying new capital to take care of the carrying charges. Of course as the amount of oil in the ground is distinctly limited, he cannot produce solely with the view of paying interest and other carrying charges for an indefinite period without reducing the amount of oil in the ground to the point where he cannot hope to recover the capital that he invested in the development of the lease.

However, despite this limitation it is evident that the producer controlling leases that are not subject to drainage is in a better position to hold back crude oil while it still remains in the ground than he would be after it had been brought to the surface. Similarly, his position is materially better than that of a purchaser of crudes, a refiner, or a marketer who attempts to withhold oil from the market until the period of overproduction has passed. It follows that the chances of success of any movement attempting to reduce the visible supply of oil above ground by the restriction of the production of developed leases not subject to drainage will be greater than those of any of the movements mentioned previously. However, the success of the movement will depend upon the support given it by the majority of the operators and not merely the support given by a few.

Limited Curtailment

Undoubtedly the overproduction of oil in the United States during 1927 and 1928 would have been much greater if the production of all of its developed pools had been maintained at maximum capacity. Yet it is recognized by all that the number of areas in which unified control permits the shutting down of properties is too small in comparison with the extent of the areas in which competitive operations prevail to have more than a minor influence upon the condition of the industry as a whole. No shutdown or proration movement involving a large number of producers operating leases subject to drainage by wells on adjacent properties has ever been successful for more than a few months. Invariably the need or greed of one operator has caused him to abandon the restrictions on production and to operate his wells at capacity. Immediately, the rest of the producers in the pool did likewise. Even though operators in other pools were not influenced by the fear of drainage they have found it advisable to open up their wells rather than face the chances of an indefinite postponement of the return of higher prices caused by the active operations in such pools.

One of the natural consequences of continued overproduction and low prices is the forced selling of fully developed properties by the weaker companies to the stronger organizations. If the period of depression continues for a long time, this may result in the elimination of the majority of the weak operators in all of the centers of flush production and make it possible for the stronger ones to carry the shutdown to a successful conclusion. However, there are a number of physical difficulties that tend to make this process of absorption of the weak by the strong a slow one. In the first place, many of the so-called weak or small companies may, through ownership of gusher production, be in the position to make money temporarily even if their oil is sold at what to others would be ruinous prices. Secondly, the strong companies feel the pinch of low prices themselves. They cannot finance the purchase of additional properties out of earnings. The unhappy situation of the business as a whole impairs the credit of the larger and stronger companies as well as the smaller and weaker ones in the minds of the bankers and the investing public. Though the executives of these companies may be convinced that the purchase of additional producing properties will prove highly profitable in the long run, they may hesitate to recommend that their companies weigh themselves down with the bank loans or bond issues needed for such purchases.

Weak Ownership

Without the elimination of weak or greedy ownership of leases in competitively drilled pools, little can be expected from any shut-down or proration agreements. If such ownership is eliminated, the possibilities of effective shut-downs are greatly increased. However, the complete shutting-down of a developed property cannot be continued for a long period by any producing company, regardless of its financial strength, because of the size of the investment that it has made in development and the necessity of securing a return of its capital within a reasonable length of time. What are the possibilities of overcoming these difficulties by acting before the property has been developed?

Except during the latter portion of the World War and in the period of the post war boom immediately afterward, it is doubtful whether the oil industry of the United States ever faced a real shortage of crude oil. Unless conditions equally abnormal should develop, it is hardly probable that the world as a whole will face a real shortage for many years. However, declines in individual localities

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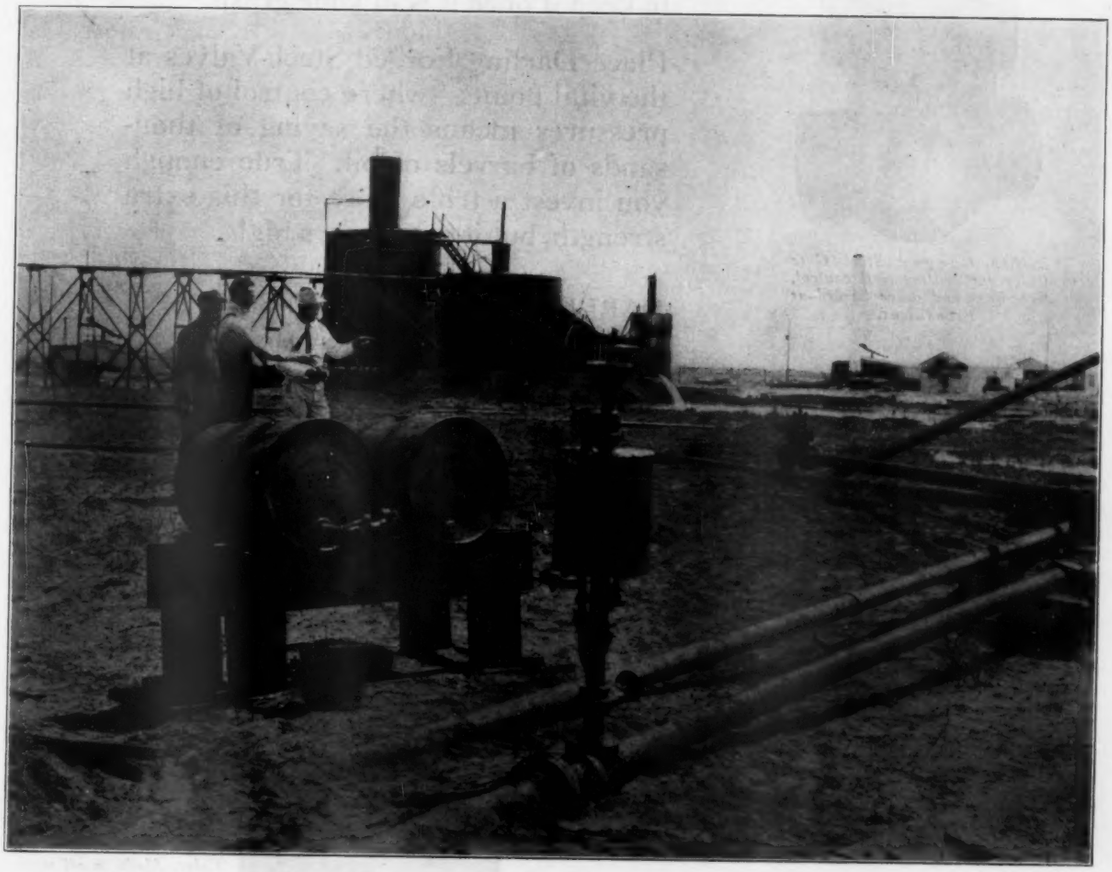

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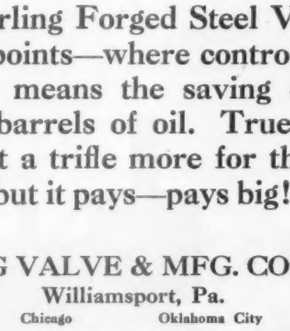

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may be expected. Unless oil can be brought in quickly and cheaply from other areas, prices will rise. While there is no reason to anticipate any marked change in the general price level in the next few years, variations in prices of very great importance to the individual operator may be expected to result from the changes in the ratio of supply to consumption incident to ordinary business activities. Even the highly stabilized steel industry has such price movements. The producer of oil who fails to secure his share of the profits during the periods when the cycle of prices is on the upswing will have very little to show in the profit column. To secure such profits he must be in the position to produce and sell the maximum quantity of oil when the upswing is on.

Wildcatting

During every period of overproduction the cry "Shut down the wildcat drill" is heard repeated again and again. Undoubtedly if wildcat tests were not made, new pools would not be discovered. As more than half of our oil comes from flush wells, the length of the period of oversupply would be decreased. However, the temporary lack of new discoveries usually serves to raise prices to levels not warranted by basic conditions and to cause the starting of an excessive number of wildcat tests before the industry has fully recovered from its previous period of oversupply. If this group of tests results in the simultaneous discovery of several new gusher pools, the period of higher prices is abruptly terminated. Those operators who started their tests during the period of high prices find that the bulk of their oil comes on the market when the industry is again depressed. Not infrequently the chief beneficiary of the short period of higher prices is the individual who starts his wildcat test during the period of low prices and is able to bring his lease to full development during the period of higher prices.

Such an individual may be considered as having acted in opposition to the best interests of the whole group. Undoubtedly, if under our present system of competitive operations a large number of producers had started tests when he did, the period of higher prices would not have materialized and the period of depression would have continued indefinitely. The industry would unquestionably place the blame for the continued overproduction upon the shoulders of those making discoveries. Yet the very life of the industry depends upon the ability of wildcatters to continue to make discoveries. The industry has been told again and again that its troubles are due mainly to the fact that it has no reserve production to fall back on. The activities of these wildcatters certainly added to that reserve. It is evident that the producers who drilled no wildcat wells or held no leases adjacent to those wells are going to be the chief sufferers in the period of depressed prices brough about by the development of the discoveries while those who made the discoveries secure whatever profits are made.

Conservative Operations

It is just as evident that if the oil from one of these new pools is thrown on the market for whatever it will bring during a period of depression, the development of the pool will not result in returns to the individual in keeping with the intrinsic value of the oil produced. There is no reason to feel that the discoverer of a new pool would, if left to choose for himself, rush the development of that pool in order to throw oil upon a market already oversupplied with crude. The amount of money invested in an individual wildcat lease is seldom large. The cost of drilling the discovery well may reach a very substantial total, especially if the well is of great depth or located at a point distant from transportation facilities. However, the total cost up to the time of discovery is seldom comparable with the cost of drilling up the whole property and placing it in production. Interest and other carrying charges are correspondingly lower. The completion of one well does not outline completely the possibilities of a pool. A number of additional wells may have to be drilled before the extent of the discovery is known. If the area is controlled by one concern these may be placed so as to prove the maximum area with the minimum cost. Unless the price of crude oil warrants further drilling there is no reason for the operator to drill additional wells. Those already completed may be allowed to produce sufficient oil to pay the overhead charges and something toward the amortization of the investment; but, as only a limited number of wells would have been drilled, there would be no need to produce at a very high rate.

Postponed Development

The slow development of Craig, Fort Collins, Wellington, and other areas in the Rocky Mountain section discovered in the last few years may be traced to the unwillingness of the companies controlling these areas to thrust oil upon already overstocked markets and to the fact that their financial situation did not force them to sacrifice future profits for immediate cash. The limited activity in the World Pool, the Gulf-Waddell Pool and around discovery wells in Ector and northern Winkler Counties in West Texas is due solely to the fact that the companies controlling these sections are content to postpone their development until conditions improve. The success of the Seminole Proration Committee in holding back the development in South Little River and around other discovery wells in that district during the past year is in direct contrast to its inability to restrain the production of the already developed pools at Seminole, Bowlegs and Earlsboro, and a clear indication of the greater willingness of operators to cooperate before they have invested heavily in drilling than after those investments have been made.

Co-operative Control

In the majority of the sections in which development work has been successfully held back during the past year and in former periods of overproduction the entire section surrounding the discovery well has been controlled by one individual or company. In a few the ownership has been vested in the hands of a relatively small number of large concerns. Having similar interests, these concerns have been able to agree on workable plans of action. Where the discovery wells were located in the centers of checkerboarded areas in whose ownership a large number of companies shared, the working out of schemes of restricted development presented many serious physical difficulties. The withholding of the development of South Little River marks an outstanding achievement in the handling of such an area. However, the use of the authority of the State to make the shutdown mandatory is greatly to be regretted because of the possibilities of state control that it brings in.

Even if there were a large number of owners each controlling one or two leases in a given pool, it is possible and even probable that they could unite in drawing up and adhering to some form of restricted development program if they were working under the same conditions. However, they are not practically all cases. The financial problems of one differ from those of the others. The necessity of presenting a good record to stockholders who know little about the conditions and problems of the industry forces one company to go ahead with development. The rest must follow to protect themselves from drainage.

Attitude on Leases

In many cases the initiation of the development work may be traced directly to the terms of the leases held. While the wording of all leases is such that the lessee must protect the owner from drainage and develop the lease on sound business lines so as to get the maximum yield of oil, the lessee still retains the power to determine when the development shall be initiated to a considerable degree. If, however, one or two of the leases near the discovery well are nearing the dates of expiration, the lessees must drill and produce or lose the leases. There is the additional alternative of securing an ex-

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LEADERSHIP IN SCREEN MANUFACTURE
FOR MORE THAN A QUARTER CENTURY

tension on the lease. After a discovery has been made, such extensions are both difficult and costly to secure, the owner being anxious to secure the wealth from royalties that he has heard so much about.

During the past two or three years the industry has put much thought on the development of a method of securing unified control of the development of the individual pool because that seems to give the only hope for regulation of the rate of production in accordance with the consumption. It has been literally deluged with plans, each drawn up by an individual who has based his suggestions upon his own particular experience in a given locality. Most of the plans have contained explicit rules for procedure. Invariably these rules for procedure have differed from those that others would have suggested in the same area and have been wholly out of line with the methods of procedure that experience has proven would be necessary in other sections. They have received but little support even from those who were most interested in the development of unified control.

Difficulties of Unit Plan

Man is a contrary individual. Men of initiative, to which class the successful oil producer belongs, are even more contrary than the average. The proposal of a plan of procedure to regulate his operations acts like a signal calling upon him to find objections to it. The announcement of plans will bring that most desirable thing, discussion, but it is hardly probable that the industry will ever adopt a plan suggested by one individual or group of individuals. Yet it is probable that the industry after thinking over the problems and the solutions proposed will try out those features that seem to have possibilities of success in the handling of specific cases. If the desired result is secured, the action will be repeated again and again until it becomes accepted practice.

State-wide agreements to shut down drilling operations are no more likely to receive the support of the public and the courts than are agreements to shut down the production of completed wells, or combinations of refiners, transporters, or marketers to control the price of oil or its products throughout the United States. Moreover the physical difficulties involved in attempts to secure uniform action on the part of individuals whose interests are widely different make the success of any move of this sort doubtful even assuming no interference by the states or the national government. In addition the steadily increasing production outside of the United States introduces a source of competition of growing importance that can hardly be expected to be guided in its operations by the same ideas that are guiding producers in the United States.

Conditions of Stabilization

Stabilization of the oil industry and conservation of the petroleum resources of the United States will come only through the application of sound business principles on the part of producers seeking a way to improve their status as individuals. As long as the oil business was dominated by the expectation of an immediate shortage of oil, the main thought of every producer was the discovery of a new pool. Every effort was concentrated on the mere making of the discovery, no thought was given to the conditions that might exist after the discovery had been made. A discovery would have resulted in enormous profits if the anticipated shortage had arrived. However, though the supplies of oil in a given locality are no longer sufficient to its needs, the number of known potential areas has increased so that today operators can no longer anticipate even such a reward. If sufficient oil is not available within the United States to meet the country's needs, its importation on an increasing scale can be confidently expected to take care of the deficit.

Increasing Investment Needed

At the same time the cost of development work has increased. Because of increased depths or distance from transportation facilities, the cost of wildcat wells has risen by leaps and bounds. The day of the individual with a few thousands of dollars and willingness to gamble his last cent on the prospects of a single hole has passed. The size of the investment required before a thorough test can be made in most sections makes even the largest company hesitate before beginning work. Geologic reports are required by all of the larger companies. Geophysical examinations have been utilized with success in some areas. Experience has shown that even with the greatest care the first completion is commonly away from the center of the structure and the area of maximum value.

The larger companies have for a number of years been committed to the policy of drilling no wildcat tests in sections where they did not control the bulk of the area immediately surrounding the tests. They have been able to carry out that policy in the Rocky Mountain states and in other sections where operations of lease brokers and speculators have not reached the proportions that they have in the older areas in Texas, Kansas, Oklahoma, California, and Louisiana. In these older sections, because of the activities of such speculators and the widespread use of the checkerboard system of leasing, they have not been able to carry the policy to its logical conclusion.

Checkerboarding Acreage

The past few years have seen a marked change in the methods of the smaller operators. Where a few years ago they were inclined to sell a large portion of the acreage that they had blocked out around their proposed test in order to secure funds to pay part of the cost of the drilling, they are much more inclined today to attempt to sell an interest in their whole venture to other small companies. The smaller operators face the same difficulties as the larger concerns in those sections where checkerboarding has been carried on.

Checkerboarding of acreage is the only means that a company has of guaranteeing that it will secure its share of the production of flush oil from new pools. It is a form of insurance against the sudden declines that mark the passing of the individual pool. The difficulties of working out agreements concerning the manner of development of checkerboarded areas before or after a discovery has been made are many. Some success has been attained by the making of drilling agreements in sections where only a few companies were interested. A larger measure of success may be anticipated through the joining of all of the interests to establish some form of unified control.

Unified Control

The form decided upon in the individual case is not of great importance. It may be entirely different from that in another case because of the difference in the controlling factors. Except where the land is controlled by the United States Government, the various Indian tribes, or by large land owners, the movement toward unified control must originate with the producers of oil. Direct regulatory action on the part of the national or the state governments is not to be desired because of its invasion of the rights of the individual and its failure to reward initiative. The days of profits comparable with those of the lottery winner have ended. The production of oil is now a business. Temporary success may be secured by those who do not treat it as such, but in the long run only those who follow the rules of sound business can succeed. One of those rules is: "Be prepared to sell when the market is ready to buy." Another is: "Capital tied up in investments that are yielding no returns is losing money." The records of Luling, Big Lake, Salt Creek, Cabin Creek, Rainbow Bend, and other pools whose discoverers and developers have been able through unified control to conduct their operations in harmony with these rules point out the rewards of this type of operation.

As other pools are added to the list and the contrast between the profits secured from these and from the competitively developed pools becomes even more

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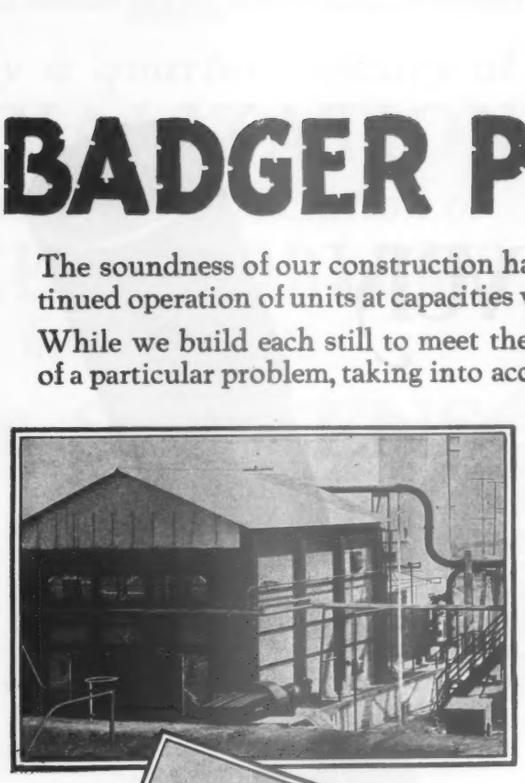
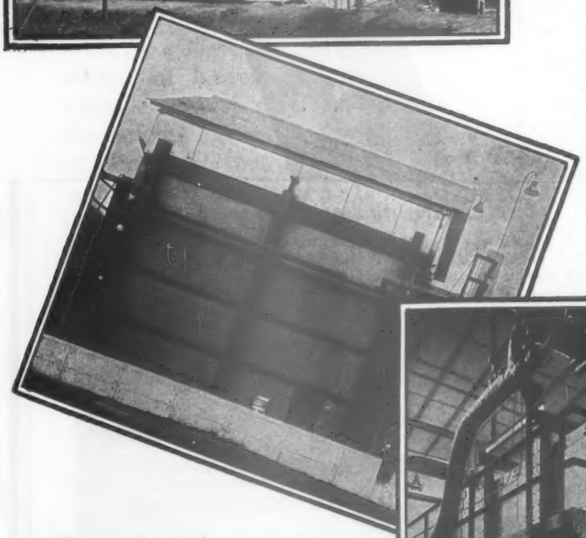
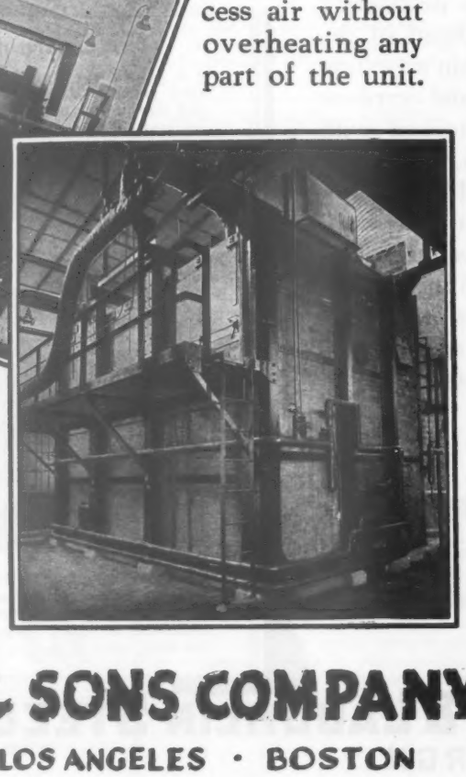
The soundness of our construction has been proven by continued operation of units at capacities well in excess of rating.

While we build each still to meet the specific requirements of a particular problem, taking into account the type of crude handled, the thruput, percentage overhead, time of heating, economical efficiency, etc., the general principles of the design are the same in all.



Radiant and convection surfaces are properly balanced and the fuel is burned with a minimum of excess air without overheating any part of the unit.





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Phillips Petroleum Co.
Pierce Petroleum Corp.
Tide Water Oil Co.
Anglo-Persian Oil Co., Ltd.
Empire Refineries, Inc.
Marland Oil Co.
Vacuum Oil Co.
Associated Oil Co.
Barnsdall Corp.
Humble Oil & Refining Co.
Tidal Refining Co.
Standard Oil Co. of N. J.
General Petroleum Corp.
Beacon Oil Company
Lubrite Refining Co.
Pennzoil Company
Shell Company California
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apparent, oil producers as business men will find a means of combining checkerboarded areas to permit unified development. Such action will be brought about by the greatest of all controlling factors in business actions, the expectation of greater personal profits. However, one of the by-products of that action will be increased stability to every phase of the oil business. Prices may not average much higher than they are now, but the spread between high and low prices will be materially reduced. The industry will be given more chance to test and use methods giving greater recoveries of the oil in the ground and larger yields of the most desired products in the refinery. Greater stability of prices will do much toward determining the markets that the oil business may logically invade and those that it cannot economically reach. Thus through the action of the individual for his own personal profit, we may expect to attain a great degree of true conservation both in production and consumption.

KENTUCKY-TENNESSEE

(Continued from Page 79)

ber of producers, increasing the production of the new pool largely. C. E. Daugherty and others' Nos. 3 and 4 on the L. Trodgen, in the heart of the pool, produced an initial of 300 and 400 bbls. On the Ellis Bartlett 54 acres, upon which the discovery well of the pool was found, just a short distance southwest from Taffy, and adjoining the Trodgen lease, there are a couple of fine oil producers. The Bartlett lease is owned by Hupp, Duff and others, and their No. 7 showed an initial production of 200 bbls. and No. 8 produced 160 bbls.

South of Taffy, Henderson, Brand and others' second test on the Dodson lease, showed an initial of 125 bbls.

The Three Cs Oil & Gas Co.'s No. 3 on the F. R. Howard lease in the Bell's Run Pool, northwest of the Ambrose-Weller Pool, is reported good for an initial of 100 bbls.

In the Whittaker Pool, James C. Eilis and others' Nos. 1 and 2 on the Greer heirs are reported at 40 bbls. each, while their No. 4 on the Tate Howard, in the Ward Pool, is also reported at 40 bbls. initial. Same parties' No. 2 on Matt Saddler, in the Bell's Run area, is reported at 15 bbls.

New Domain Oil & Gas Co. is reported to have found a dry hole on the W. S. Evans, near the hamlet of Mangan, not far removed from Deanfield.

Near the Herbert Scholl, H. L. Ogle and others' second test on the J. W. Kellem 51 acres, is a 15-bbl. initial producer.

Chester Oil Co.'s second test on the Tom Hamilton or Hampton lease, near Deanfield and Friendship Church, produced an initial of 25 bbls. In the same area the Sirman Co.'s late well on the Nancy Farmer lease, is rated good for 500,000 feet of gas.

James C. Ellis and others are reported to have drilled a dry hole in No. 2 on the Ellis Bartlett 62 acres, in the Bartlett Pool, near Taffy, and also drilled a dry hole on the M. J. Brown 90 acres in the Deanfield area at 804 feet.

Wood Oil Co.'s No. 2 on the E. P. Rogers, in the northern part of Ohio County, produced 10 bbls., while No. 3 is rated at 50 bbls. initial. No. 3 went to a depth of 676 feet.

Weir & Stewart's second test on the Joe Norris lease, in the Deanfield area, is reported at 2 bbls. In this well a string of 369 feet of casing was set, sand found at 382-85 feet and total depth of hole 420 feet.

Armistead Oil Co. has a very nice gas well in No. 3 on the P. R. Kelley in the Friendship Church Pool.

Joseph B. Mayer drilled in a gas well in No. 13 on the Guenther-Gant property, in the old Ellis Pool, just a short distance east from the hamlet of Collier, that is reported at 750,000 feet. This lease was developed a few years ago by the Chicago Petroleum Syndicate, but little attention was shown the gas output. Now things have changed and the gas will not be wasted as it was some seasons back. The Guenther-Gant tract consists of 300 acres, the northwestern part of the acreage being the most prolific for oil. On the east side of the big lease a dry hole was drilled along the line across from the Hertzing farm, between Collier Station and Deanfield. There are still many spots in this area that look inviting and the same can be said of the entire northern part of Ohio County.

Daviess County

The best of the late completions from the Daviess County fields, was the Cumberland Petroleum Co.'s No. 5 on the S. H. Easton 75 acres, in the Burton Pool, reported an initial producer of 100 bbls.

Smith, Randolph and others' No. 10 on the Oscar Wells 80 acres, in the Utica Field, produced an initial of 60 bbls. This has been one of the good leases of the county.

The Petroleum Co.'s No. 3 Ellis Interests on the Tony Hansford lease in the Utica Field, is reported at 20 bbls. initial.

Trognite Oil & Gas Co.'s No. 3 on the H. B. Trodgen 85 acres, in the Red Hill district, produced 15 bbls. initial.

Scattered Wells

Southwest of Bowling Green, in Warren County, the McGinley-Randall Supply Co. drilled a dry hole in No. 3 well, 1,200 feet from the north and west lines of the John Hudson lease. Allen Oil & Gas Co.'s No. 3 on an unknown lease south of Bowling Green, pumped only 1 bbl. at 470 feet. The Hudson well went to a depth of 570 feet.

In the Gainesville Field of northeastern Allen County, E. D. Defenbaugh's No. 5 on the L. Beam, was a duster at around 320 feet.

In the Pellville Field of Hancock County, McMahan and Combs found a fair gas well in No. 5 on the Hancock County Development Co.'s block of 3.000 acres. The gas was found in the Jackson sand. H. A. Henry drilled a dry hole in No. 2 on the P. J. Stephens 75 acres, same field.

Field Pickups

The test being drilled by McClintoch and Reed on the R. E. Carmon lease, 3 miles west of Cloverport, in Breckenridge, is reported making a showing of oil at 1,075 feet.

Judge J. M. Stevenson, president of the Rex-Pyramid Oil Co., and Roy Mace, general manager, both of Winchester, spent a few days looking over the company's large holdings in Ohio County.

Vickers, White and others missed the finding of the Stray sand oil in No. 5 on the Evans lease, east of Whitesville, in Daviess County, and are going for a deeper pay.

In Ohio County, the Wood Oil Co. is drilling No. 4 on the E. P. Rogers lease in the northern part of the county. H. L. Ogle and others' No. 5 on the Payton Royal lease, in the Friendship Church area, same county, is reported making a good showing, with No. 6 drilling and location made for No. 7. The Armistead Oil Co. is starting No. 4 on the P. R. Kelley, in the same area. Dixton Oil Co. is drilling a test on the Myrtle Floyd, near the Herbert school house.

The Whitmer Oil & Gas Co. has moved a drilling outfit to No. 2 on the Branham lease, a short distance from Hewletts Store along the Hartford Road, at the edge of Ohio and Daviess Counties.

James C. Ellis is drilling No. 4 on the T. M. Howard lease, about 2 miles south of Whitesville, in Daviess County. Cumberland Petroleum Co. is drilling No. 3 on the Salmon lease, in the Salmon Pool, same county. Petroleum Exploration Co. is starting No. 1 on the W. R. Russell, in the Hayden Pool. Trognite Oil & Gas Co. is drilling No. 4 on the H. B. Trodgen 85 acres, in the Red Hill section of Daviess County, and Robbins, Brewer and Thrasher are drilling on the Ware lease, near the Cane Run School. Huff and Calderwood are drilling No. 2 Jess Litsey, in the Salmon Pool, same county.

Carl Weideman of Cleveland, flew by airplane from Cleveland to Owensboro and has been looking over the big holdings of the Cumberland Petroleum Co., in both Ohio and Daviess Counties. This company is drilling on the Cicero Wade lease in the Bartlett Pool of Ohio County.

The question of elimination of crooked holes is foremost in the minds of operators.

Use spiral stems manufactured by the Titusville Forge Co., and you will eliminate this question once and for all.

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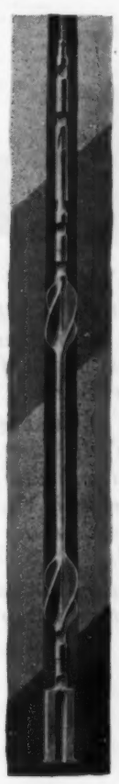

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No Seams • No Hinges • No Metal •

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 66)

Midwest Explt'n. Co.'s No. 3 Cooper, 990 ft. S and 330 ft. E NW cor. W½ NW, Sec. 5, Blk. 9, I.&G.N.R. R. Sur. ... Rigging up.

Morris et als' No. 1 Barnard, NW cor. SW SE, Sec. 44 ... 2,000,000 ft. gas 2,752-62 ft; S.D. 3,280 ft; show oil.

Ryan Oil Co.'s No. 3 Black, 990 ft. from S line, 330 ft. from E line NE, Sec. 111, Blk. 4, L&G.N.R.R. Sur. ... Drlg. 1,250 ft.

Ryan Oil Co.'s No. 4 Block, 990 ft. from N line and 330 ft. from E line NE, Sec. 111, Blk. 4, I.&G.N. Sur. ... Drlg. 505 ft.

Skelly Oil Co.'s No. 15 Schafer, 330 ft. from S line and 330 ft. from W line NE, Sec. 198, Blk. 3, I.&G.N. ... Set 8-in. at 1,208 ft.

Stubblefield et als' No. 1 Garner, 330 ft. from S and E lines SE, Sec. 104, Blk. 4 ... Spud and S.D.

Timmis et als' No. 2 Garner, 330 ft. from N line and 330 ft. from E line SW SW, Sec. 113, Blk. 4, I.&G.N. ... Drlg. 385 ft.

Travis et als' No. 1 D. A. Harrel, C NE NE, Sec. 162, Blk. 7, I.&G.N. Sur. ... 250,000 ft. gas from 3,520-30 ft; C.O. 3,780 ft.

CASTRO COUNTY

Colorado O. & R. Co.'s No. 1 M. Slemmons, SW cor. Sec. 73, Blk. M-17, B.S.&F. Sur. ... Rig blown down.

Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S.K.&K. Sur. ... S.D. 510 ft. for csg.

CHILDRESS COUNTY

C. L. Sloane et als' No. 1 B. P. Smith, Sur. 49, F. P. Knott lands ... S.D. 4,340 ft.

COCHRAN COUNTY

Marland Prod. Co.'s No. 1 Slaughter-A, 330 ft. from W and 430 ft. from S lines, League 130, Carson County School land ... Drlg. 2,305 ft.

COTTLE COUNTY

Explt'n. Co.'s No. 1 Richards ... S.D. 3,535 ft. for csg.

Explt'n. Co.'s No. 4 Matador Land & Cattle Co., C, Sec. 46, J. H. Stephens Sur. ... S.D. 3,227 ft.

Sun Oil Co.'s No. 1 T. B. Yarborough, 485 ft. S and 2,460 ft. E NW cor. Sec. 551, Blk. H, W.&N.W. Sur. ... Drlg. 4,175 ft.

DONLEY COUNTY

Blue Bonnett Oil Co.'s No. 1 Ball, 1,075 ft. from N line, 985 ft. from E line, Sec. 32, Blk. E, D.&P.R.R. Sur. ... S.D. 1,912 ft.

Marine Oil Co.'s No. 1 Sawyer, C SW, Sec. 5, Blk. G, G.C.&S.F. Sur. ... Drlg. 2,830 ft.

GRAY COUNTY

Anderson et als' No. 1 Heitholt, C NE SW, Sec. 152, Blk. 3, I.&G.N. Sur. ... 2,000,000 ft. gas from 2,685-2,800 drlg. 3,092 ft; 15,000,000 ft. gas 2,810-2,940 ft; drlg. 3,125 ft; show oil 3,094-3,100 ft.

Anderson et als' No. 1 Vallmert, 330 ft. from S, 330 ft. from W, Sec. 140, Blk. 3, I.&G.N. Sur. ... Building rig.

Amagray Oil Co.'s No. 2 Chapman, 330 ft. S and W NE cor. W½ SW, Sec. 9, Blk. 26, H.&G.N. Sur. ... Fish. 2,612 ft; show gas 2,025-2,-120 ft. and 2,230-50 ft; 30,000,-000 ft. gas 2,315-20 ft.

British American Oil Co.'s No. 1 Purviance, 330 ft. each way from NW E 160 ac., Sec. 61, Blk. B-2, H.&G.N. ... Show oil 2,767 ft; testing 3,008 ft.

British-American Oil Co.'s No. 2 Purviance, 330 ft. N and E SW cor. E 160 ac., Sec. 61, Blk. B-2, H.&G. N.R.R. Sur. ... Location.

Champlin Ref. Co. and Danciger's No. 1 Cook Faulkner, 330 ft. each way from SW cor. W 120 ac., E 200 ac., Sec. 30, Blk. B-2, H.&G.N. Sur. ... Run. 8-in. csg. 2,753 ft.

Champlin Ref. Co.'s No. 2 Jackson, 330 ft. each way from SE cor., W 100 ac., Sec. 60, Blk. B-2, H.&G.N. ... Drlg. 2,785 ft.

Crabtree Drlg. Co.'s No. 1 B. F. Talley, SW NE, Sec. 114, Blk. M-2, B.S.&F. Sur. ... S.D. 2,740 ft.

Constantine et als' No. 1 Dial, 330 ft. S and E of NW cor. W½ NW, Sec. 32, Blk. 25, H.&G.N. Sur. ... S.D. 2,965 ft; encountered salt wtr.

Danciger O. & R. Co.'s No. 4 Morse, 330 ft. S and E NW cor. NW SW, Sec. 1, Blk. 26, H.&G.N. Sur. ... Drlg. 2,175 ft.

Danciger O. & R. Co.'s No. 2 Beck, 330 ft. N and E SW cor. NW, Sec. 28, Blk. B-2, H.&G.N. Sur. ... Rig.

Danciger O. & R. Co.'s No. 3 Beck, 330 ft. S and 990 ft. E NW, Sec. 28, Blk. B-2, H.&G.N.R.R. Sur. ... Drlg. 1,500 ft.

Danciger's No. 2 Shell-Shaw, 330 ft. each way from SE cor. E½ SW, Sec. 5, Blk. 1, A.C.H.&B. Sur. ... S.D. 2,602 ft.

Danciger et als' No. 1 Sheridan, SE cor. Sec. 184, Blk. B-2, H.&G.N.R.R. Sur. ... Temp. abd.

Danciger O. & R. Co.'s No. 1 Williams, 330 ft. from N, 330 ft. from E, S½ NW ... Location.

Delaney and Associates Oil Co.'s No. 8 Jackson, 990 ft. S and 330 ft. E NW cor. E½ SW, Sec. 88, Blk. B-2, H.&G.N.R.R. Sur. ... C.O. 580 ft.

Bob Dunlap's No. 2 Morse, 990 ft. from N, 330 ft. from W, Sec. 2, Blk. 26 ... Location.

Empire G. & F. Co.'s No. 1 R. M. Brown, C SE, Sec. 238, Blk. B-2, H.&G.N. Sur. ... Drlg. 2,860 ft; 5,000,000 ft. gas 2,-705 ft.

Empire G. & F. Co.'s No. 1 Noel, C SE, Sec. 151, Blk. 3, I.&G.N.R.R. Sur. ... Spudding.

Sines & Reiger's formerly Eslick et als' No. 1 Mrs. J. A. Hopkins, NW cor. W 80 ac. of SW, Sec. 84, Blk. B-2, H.&T.C. Sur. ... S.D. 3,206 ft.

Gulf Prod. Co.'s No. 2 Saunders, 990 ft. N and E, SW cor., Sec. 3, Blk. 1, A.C.H.&B.R.R. Sur. ... Location.

Independent O. & G. Co.'s No. 1 Hollenbeck, 990 ft. each way from NE cor. NE, Sec. 176, Blk. 3, I.& G.N.R.R. Sur. ... 5,000,000 ft. gas from 2,428-83 ft; fish. 2,982 ft.

Lyon et als' No. 1 Morse, 330 ft. N and E SW cor. N½ NE, Sec. 2, Blk. 26, H.&G.N.R.R. Sur. ... Building rig.

Magnolia Pet. Co.'s No. 1 Wright, 330 ft. S and W lines S½ SW, Sec. 13, Blk. 3, I.&G.N. Sur. ... Location.

McLain Oil Co.'s No. 1 Back, 1,000 ft. from W line and 330 ft. from N line, NW, Sec. 24, Blk. 25, H.&G.N. Sur. ... 1,000,000 ft. gas 2,105-10 ft. and estimated 3,000,000 ft. gas 2,202-08 ft; S.D. 2,642 ft; show oil 2,-565-90 ft.

Marland Prod. Co.'s No. 3 Finley-Brown, 1,224 ft. from E line, 330 ft. from N line, Sec. 32, Blk. B-2, H.& G.N. Sur. ... Set 8-in. csg. 2,010 ft.

Midwest Explt'n. Co.'s No. 2-B Bowers, 1,320 ft. from N, 330 ft. from E, Sec. 93, Blk. B-2, H.&G.N.R.R. Sur. ... Location.

Mordyan O. & G. Co.'s No. 2 Davis, 660 ft. S and E, NW cor. S½ NW, Sec. 8, Blk. 1, A.C.H.&B. Sur. ... Location.

Nabob Oil Co.'s No. 2 Morse, 660 ft. from W line and 330 ft. from S line SW, Sec. 67, Blk. 25, H.&G.N. R.R. Sur. ... S.D. 1,970 ft.

Oil Operators' No. 1 Bowers, 330 ft. from N, 330 ft. E, Sec. 93, Blk. B-2, H.&G.N. Sur. ... Location.

Operators Oil Co.'s No. 2 Cook-Faulkner, 903 ft. from S line and 330 ft. from W line of W 90 ac., Sec. 30, Blk. B-3, H.&G.N. Sur. ... Drlg. 2,800 ft.; 6,000,000 ft gas.

Operators Oil Co.'s No. 3 Cook-Faulkner, 330 ft. each way from SE cor. W 90 ac., Sec. 30, Blk. B-2, H. &G.N. Sur. ... Drlg. 2,793 ft.

Osborn et als' No. 1 Morse-H, 330 ft. N and E SW cor. S½ NE, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. ... Location.

Phillips Pet. Co.'s No. 1 Jackson, 330 ft. each way from NE cor. NE, Sec. 58, Blk. B-2, H.&G.N.R.R. Sur. ... C.O. 2,722 ft.

Pillips Pet. Co.'s No. 2-A Jackson, 425 ft. S and E, NW NE, Sec. 88, Blk. B-2, H.&G.N.R.R. Sur. ... Location.

Phillips Pet. Co.'s No. 5 Jackson, 330 ft. S and 990 ft. E NW cor. S½ NE, Sec. 88, Blk. B-2, H.&G.N. Sur. ... Drlg. 2,150 ft.

Phillips Pet. Co.'s No. 2 Palmer, 903 ft. from S line and 330 ft. from E line of E 83.4 ac., Sec. 31, Blk. B-2, H.&G.N. Sur. ... Drlg. 2,829 ft; 40,000,000 ft gas.

Phillips Pet. Co.'s No. 3 Palmer, 330 ft. each way from SW cor. E 83.1 ac., Sec. 31, Blk. B-2, H.&G.N. Sur. ... C.O. 2,737 ft.

Phillips Pet. Co.'s No. 4 Palmer, 330 ft. N and W of E 331 ac., Sec. 31, Blk. B-2 ... Drlg. 675 ft.

Prairie O. & G. Co.'s No. 1 Langham, 330 ft. N and E SW, Sec. 1, Blk. B-2, H.&G. N.R.R. Sur. ... Rigging up.

Panhandle Ref. Co.'s No. 1 Saunders, 330 ft. S and E NW cor. E½ NE, Sec. 3, Blk. 1, A.C.H.&B. Sur. ... 15,000,000 ft. gas 2,150-2,320 ft; show oil 2,663 ft; T.D. 2,781 ft; shot 150 qts. from 2,630-2,759 ft. and 340 qts. from 2,640-2,759 ft; bailed 2 bailers oil; C.O.

Panhandle Ref. Co.'s No. 2 Saunders, 330 ft. S and W NE cor. E¼ NE, Sec. 3, Blk. 1, A.C.H.&B. Sur. ... Drlg. 2,850 ft.

Quillian et als' No. 1 Barrett, 330 ft. from N, 330 ft. from E, Sec. 131, Blk. 3, H.&G.N. Sur. ... Rig.

Scott Drlg. Co. et als' No. 1 Chapman, 330 ft. N and E SW cor. S½ NE, Sec. 69, Blk. 25, H.&G.N. Sur. ... Drlg. 2,530 ft; show gas 2,500 ft.

Ray Massie's No. 4 Chapman, 330 ft. each way from NW SE SW, Sec. 51, Blk. 25, I.&G.N. Sur. ... Drlg. 2,230 ft.

Shamrock Oil Co.'s No. 2-J Chapman, 450 ft. from N, 150 ft. from E, of W 41 ac. of E 319 ac. ... Location.

Shell Pet. Corp.'s No. 3 McConnell, 330 ft. N and W SE cor. Sec. 174, Blk. 3, I.&G.N.R.R. Sur. ... Fish. csg. 1,525 ft.

Sherwood et als' No. 1 Gething, 330 ft. N and W SE cor. N½ NE, Sec. 14, Blk. A-9, H.&G.N. Sur. ... Building rig.

Skelly Oil Co.'s No. 1 Jackson, 330 ft. from S and W lines E½, Sec. 62, Blk. B-2, H.&G.N.R.R. Sur. ... Set 15-in. csg. 535 ft.

Skelly Oil Co.'s No. 2 Jackson, 330 ft. S, 2,990 ft. W of W 160 ac., Sec. 90, Blk. B-2 ... Rig.

Skelly Oil Co.'s No. 3 Jackson, 330 ft. from S and E lines of W 160 ac., Sec. 90, Blk. B-2, H.&G.N.R.R. Sur. ... Rig.

St. Clair Oil Co.'s No. 1 Dial, 330 ft. S and W NE cor. SE, Sec. 10, Blk. 25, H.&G.N.R.R. Sur. ... Cellar.

St. Clair Oil Co.'s No. 1 Rowe, Sec. 32, Blk. R ... S.D. 3,490 ft. with H.F.W.

St. Clair Oil Co.'s No. 1 L. S. Stockton, SE cor. Sec. 35, W. R. Lee Sur. ... Spudded and S.D.

Sun Oil Co.'s No. 3 Purviance, 250 ft. from S, 287 ft. from W, Sec. 61, Blk. B-2, H.&G.N.R.R. Sur. ... Drlg. 1,210 ft.

The Texas Corp.'s No. 10 Bowers, 330 ft. from N and E lines of E½, Sec. 89 ... Drlg. 425 ft.

The Texas Corp.'s No. 11 Bowers, 330 ft. S, 990 ft. E, of E½, Sec. 89 ... Drlg. 755 ft.

The Texas Corp.'s No. 12 Bowers, 330 ft. from N and 330 ft. from W of NE, Sec. 63, Blk. B-2 ... Drlg. 568 ft.

The Texas Corp.'s No. 13 Bowers, 990 ft. from N and 330 ft. from W line E½, Sec. 89, Blk. B-2, H.&G. N.R.R. Sur. ... Drlg. 256 ft.

The Texas Co.'s No. 2 B. Bull, 990 ft. S and E NW, Sec. 2, Blk. B-2, H.&G.N.R.R. Sur. ... Drlg. 2,670 ft.

The Texas Co.'s No. 2 Comb-Worley, 330 ft. N and 2,310 ft. W SE cor. S½ S line, Sec. 36, Blk. 3, I.&G.N. Sur. ... Drlg. 2,007 ft.

The Texas Co.'s No. 3 Comb-Worley, 330 ft. N and W SE cor. Sec. 36, Blk. 3, I.&G.N. Sur. ... Location.

The Texas Co.'s No. 4 Comb-Worley, 330 ft. N and 1,-736 ft. W SE cor. Sec. 36, Blk. 3, I.&G.N. Sur. ... Location.

The Texas Corp.'s No. 4 Cook-Faulkner, 1,973 ft. from W line and 330 ft. from N line of W 160 ac., Sec. 29, Blk. B-2, H.&G.N. Sur. ... Drlg. 2,678 ft.

The Texas Corp.'s No. 3 Cook-Faulkner, 1,313 ft. from W line and 380 ft. from N line of W 160 ac., Sec. 29, Blk. B-2, H.&G.N.R.R. Sur. ... Drlg. 1,815 ft.

The Texas Co.'s No. 5 McLarty-A, 330 ft. S and E of NW cor. Sec. 2, Blk. 1, A.C.H.&B. Sur. ... Show gas 2,235 ft; T.D. 2,910 ft; C.O.; shot 100 qts. 2,756-2,910 ft.

The Texas Co.'s No. 2 McLarty-B, at center of J. M. Rose Sur. ... Rig.

The Texas Co.'s No. 2 Shaw, 1,000 ft. from S and 330 ft. from W line E½, Sec. 5, Blk. 1, A.C.H.&B. Sur. ... Standardizing at 3,598 ft.

The Texas Co.'s No. 4 Williams, 330 ft. each way from NE NE NW, Sec. 6, Blk. 1, A.C.H.&B. Sur. ... Drlg. 1,910 ft.

Wilcox-Pampa Oil Co.'s No. 7 Comb-Worley, 330 ft. N and E SW cor. SE, Sec. 60, Blk. 3, I.&G.N. Sur. ... Drlg. 2,815 ft.

Wilcox-Pampa Oil Co.'s No. 8 Comb-Worley, 330 ft. NW SE SE, Sec. 60, Blk. 3, I.&G.N. Sur. ... Drlg. 1,800 ft.

HOCKLEY COUNTY

World Oil Co.'s No. 1 Ellwood, 320 ft. from N and W lines, League 7, Wilbarger County School lands; elevation 3,363 ft; contract depth 5,000 ft. ... S.D. 1,550 ft.

HARTLEY COUNTY

Amarillo Oil Co.'s No. 9 Lee Bivins "A," C NW, Sec. 6, Blk. 21 ... Show oil 3,780 ft; drlg. 4,123 ft; 100,000 ft. wet gas 3,990 ft.

HUTCHINSON COUNTY

Amarillo Oil Co.'s No. 2 Ingerton-A, 1,650 ft. from N line, 1,071 ft. from E line, Sec. 41, H.&T.C.R.R. Sur. ... 50,000,000 ft. gas 1,300 ft; C.O. 1,400 ft.

Danciger et als' No. 2 Moore, 330 ft. from E, 990 ft. from S, W½ SE, Sec. 125, Blk. 4 ... Location.

Holmes et als' No. 2 Quinn, 990 ft. from S line and 330 ft. from E line SW, Sec. 7, Blk. 9, I.&G.N. Sur. ... Drlg. 620 ft.

Huey et als' No. 3 Smith et al, 330 ft. from N and 600 ft. from W of S 40 ac. of E 160 ac., SE, Sec. 12, Blk. Y ... Spudding.

Marland Oil Co.'s No. 2 Reimer, 3,753 ft. S and 450 ft. E of NW cor., Sec. 31, Blk. 47, H.&T.C. ... Cellar.

McMan O. & G. Co.'s No. 2 Sanford, 300 ft. from W line and 315 ft. from S line N 274 ac., Sec. 83, Blk. 46, H.&T.C. Sur. ... Drlg. 2,115 ft.

Midwest Explt'n. Co.'s No. 2 Moore, 330 ft. from S, 1,320 ft. from W, Sec. 125, Blk. 4, H.&G.N. Sur. ... Location.

Oil Operators Trust Co. and Marland's No. 2 J. M. Stanford-B, Sec. 82, Blk. 46, H.&T.C. Sur. ... S.D. 3,039 ft.

O. B. Penney's No. 2 Johnson Bros., 330 ft. from S line, 330 ft. from W line W½ NE, Sec. 35, Blk. Y, A.&B. Sur. ... Drlg. 1,655 ft.

Phillips Pet. Co.'s No. 1 Cheatham, 427 ft. N and 330 ft. W SE cor. SE SE, Sec. 38, Blk. Y ... Rigging up.

Phillips Pet. Co.'s No. 1 Johnson Bros., 330 ft. from N and W lines NW, Sec. 34, Blk. Y, A.&B. Sur. ... Drlg. 2,430 ft.

Phillips Pet. Co.'s No. 1 Johnson-Kotz, 350 ft. N and 330 ft. E SW W½ SW, Sec. 35, Blk. Y ... Building rig.

Phillips Pet. Co.'s No. 4 Johnson, Sec. 28, Blk. Y, A. &B. Sur. ... Drlg. 675 ft.

Phillips' No. 1 Sanford-Glass, 660 ft. S and E of NW cor. S 80 ac. of N 160 ac. of S 320 ac., Sec. 80, Blk. 46, H.&T.C. Sur. ... Drlg. 2,667 ft.

Phillips Pet. Co.'s No. 6 (Florence), 330 ft. each way from S and W lines, E½ ... Drlg. 500 ft.

Prairie O & G. Co.'s No. 4 Cal Merchant, 5,612 ft. S and 330 ft. E NW, Sec. 37, Blk. 47, H.&T.C.R.R. Sur. Building rig.

Prairie O. & G. Co.'s No. 4 Shaw, 330 ft. S and 990 ft. W NE cor., Sec. 27, Blk. Y ... Drlg. 645 ft.

Skelly Oil Co.'s No. 8 Whittenburg, 330 ft. from S and 2,230 ft. from W, Sec. 22, Jameson Sur. ... Rig.

Skelly Oil Co.'s No. 7 Whittenburg, 330 ft. from S and 1,570 ft. from W lines, Sec. 22, Jameson Sur. ... Set 10-in. csg. 903 ft.

The Texas Co.'s No. 2 Quinn, 990 ft. N, 330 ft. E SW cor. E½, Sec. 7, Blk. 9, I.&G.N. Sur. ... Building rig.

KING COUNTY

Huff Oil Co.'s No. 1 Martin, 1,320 ft. from N line and 1,320 ft. from E line, Sec. 171, Blk. F, H.&T.C. Sur. ... Rig.

LAMB COUNTY

Dan Freed et als' No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. ... S.D. 1,150 ft; repairs.

LIPSCOMB COUNTY

Brown et als' No. 1 Box T Ranch, SW NE, Sec. 612, H.&T.C. Sur. ..... S.D. 3,128 ft.

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. ..... Drlg. 4,520 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch ..... Small show oil 1,133-40 ft; sand; fish. 4,167 ft.

MOORE COUNTY

Amarillo Oil Co.'s No. 1 Read-A, C NW, Sec. 14, Blk. 13-12, D.&P. Sur. ..... Drlg. 400 ft.

Amarillo Oil Co.'s No. 1 Perkins-A, 330 ft. each way out of NW cor. NE, Sec. 76, Blk. 3 ..... Rig.

Amarillo Oil Co.'s No. 2 Warrick, C S 160 ac., Sec. 92, Blk. 46, H.&T.C. Sur. ..... 60,000,000 ft. gas from 1,580-2,910 ft; drlg. 3,140 ft; show oil.

Barnsdall Oil Co.'s No. 1 Harrison, 330 ft. from N line and 330 ft. from E line S½ NE, Sec. 5, Blk. M-2 ..... Standardizing 2,830 ft.

Dana O. & G. Co.'s No. 1 Anthony, C NW, Sec. 360, Blk. 44, H.&T.C.R.R. Sur. ..... Rig.

Dana O. & G. Co.'s No. 1 Road-A, C NW, Sec. 14, Blk. B-12 ..... Location.

Fritch O. & G. Co.'s No. 1 Lee Burns, C NE 40 ac. of N 160 ac., Sec. 4, Geo. Mahan Sur. ..... Spudded and S.D.

Phillips Pet. Co.'s No. 1 Taylor, 330 ft. N and E SW cor. E½ NW cor. Sec. 244, Blk. 3-T T.&N.O. Sur. ..... 5,000,000 ft. gas from 2,825-2,925 ft; 10,000,000 ft. gas 3,020 ft; 20,000,000 ft. gas 3,040 ft; reset 6-in. csg; drlg. 3,280 ft.

Phillips' No. 1 Wilson, 330 ft. each way out of NW cor. S½ SE, Sec. 157, Blk. 3-T ..... Drlg. 2,275 ft.

Skelly Oil Co.'s No. 8 Armstrong & Byrd, 2,920 ft. S and 3,752 ft. of NW cor. Proctor Sur. ..... Drlg. 2,760 ft; 27,000,000 ft. gas 2,550-2,760 ft.

Skelly Oil Co.'s No. 9 Armstrong & Byrd, 2,220 ft. S and 990 ft. E NW cor. Proctor Sur. ..... Drlg. 1,600 ft.

MOTLEY COUNTY

Explin. Co.'s No. 5 Matador, C, Sec. 45, Blk. J-B, C. B.&C.N.G.R.R. Sur. ..... Spudded and S.D.

Explin. Co.'s No. 6 Matador, 330 ft. from N line and 330 ft. from E line, Sec. 132, Blk. M ..... S.D. 529 ft.

Matador Oil Corp.'s No. 1 Owen, C NE, Sec. 10, Blk. G, B.&B. Sur. ..... Rig.

RANDALL COUNTY

W. H. Patterson's No. 1 Palo Duro, Sec. 60, Blk. K-14 ..... S.D. 1,250 ft.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Ledrick, Sec. 7, Blk. 5-A ..... S.D. 5,975 ft.

WHEELER COUNTY

Anderson's No. 1 Meiners, C SW SE, Sec. 71, Blk. 17, H.&G.N.R.R. Sur. ..... S.D. 1,162 ft.

Angus et als' No. 1 Linkey, C NE NW, Sec. 126, Blk. 23 ..... Drlg. 450 ft.

Byrens et als' No. 1 Johnson, SW cor. NE, Sec. 88, Blk. A-5, H.&G.N. Sur. ..... S.D. 2,920 ft.

Fain et als' No. 2 Binkley & Cain, C SE, Sec. 5, Blk. 24, H.&G.N. Sur. ..... Rigging up.

Gillespie et als' No. 1 McMurtrey, C NW SE, Sec. 67, Blk. 17, H.&G.N. Sur. ..... S.D. 1,620 ft.

Johnson et als' No. 1 Hicks, C NW SW, Sec. 49, Blk. 17, H.&G.N.R.R. Sur. ..... Rig.

Johnson & Wisch Kamper's No. 1 West, C NE NW, Sec. 30, Blk. 17, H.&G.N. Sur. ..... Spudding.

Lone Star Gas Co.'s No. 3 Burcham, C NE SE, Sec. 91, Blk. 17, H.&G.N. Sur. ..... Location.

Magnolia Pet. Co.'s No. 1 Trostle, C S½ NW SW, Sec. 130, Blk. 23, H.&G.N.R.R. Sur. ..... Fish. at 1,810 ft; 1,000,000 ft. gas 1,795 ft; gas increased to 45,000,000 ft.

Martin & Dubois' No. 1 Otis Sasher, C SW SE, Sec. 69, Blk. 17, H.&G.N. Sur. ..... Location.

Upham Gas Co.'s No. 2 Gooch, 330 ft. from S and E lines N½ SE, Sec. 31, Blk. 23 ..... S.D. 1,355 ft.

Upham Gas Co.'s No. 1 Shelton, C SE NE, Sec. 22, Blk. 24, H.&G.N.R.R. Sur. ..... Drlg. 1,525 ft.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 65)

CRANE COUNTY

Duffey & Skelly's No. 1 University, 2,310 ft. from S, 330 ft. from E Sec. 45, Blk. 30, University Land ..... Drlg. 200 ft.

Gulf Prod. Co.'s No. 6 McElroy, 1,442 ft. from N and 4,950 ft. from W of Sec. 200, Blk. F, C.C.S.D.& R.G.N.G. ..... Location.

Gulf Prod. Co.'s No. 7 Waddell, Sec. 10, Blk. B-23, 2,640 ft. from S, 330 ft. from W ..... Top salt 1,108 ft.; slight show gas 2,285 ft.; 1,000,000 ft. gas at 3,065 ft.; top lime 2,972 ft.; drlg. 3,490 ft.

Humble Oil & Ref. Co.'s No. 1-D University, 2,310 ft. from N and 1,650 ft. from W Sec. 34, Blk. 30 ..... Drlg. 240 ft.

Prairie Oil & Gas Co.'s No. 7 University, 330 ft. from N, 330 ft. from W Sec. 39, Blk. 30 ..... Location.

Prairie Oil & Gas Co.'s No. 8 University, 330 ft. from S, 330 ft. from W Sec. 39, Blk. 30 ..... Rigging up.

T. P. Coal & Oil Co.'s No. 2 University, 2,310 ft. from S, 1,650 ft. from W Sec. 34, Blk. 30, University Land ..... Location.

Tidal Oil Co.'s No. 9 University-I, 1,320 ft. from E, 771 ft. from S Sec. 43, Blk. 30 ..... Drlg. 2,000 ft.; top salt 1,140 ft.

CROCKETT COUNTY

Warner-Quinlan's No. 3 Dowell-University, 990 ft. from S and W Sec. 39, Blk. 30 ..... Location.

Warner-Quinlan's No. 4 Dowell-University, 990 ft. from S, 1,650 ft. from W Sec. 39, Blk. 30 ..... Location.

Eppenaur et al's No. 2 Noelke, 500 ft. N and 1,250 ft. E of SE cor. Sec. 64, Blk. 1, I.&G.N.R.R. Sur. ..... Shut down 650 ft.

Lewis & Daniels' No. 1 Pecos River Bed, 19 yards S and 37 degrees E of NW cor. Sec. 33, Blk. 1, I.&G.N. Sur. ..... Shut down 1,002 ft.

W. W. Donnelly & Young's No. 1 Shannon, SW SW SE Sec. 42, Blk. BB, T.C.R.A. Sur. ..... Shut down 910 ft.

W. W. Donnelly & Young's No. 1 Middlebuster, C Sec. 11, Blk. 9, D.&S.E. Sur. ..... 7,000,000 ft. gas at 1,663 ft.; shut down 1,755 ft.

Moncrief's No. 1 Andrews, 1,320 ft. from S, 1,170 ft. from W of Sec. 57, Blk. UV, G.C.&S.L.R.R. ..... Location.

W. A. Moncrief et al's No. 1 Massie, 1,170 ft. N and 1,320 ft. E of SW cor. Sec. 47, Blk. UV, G.C.&S.F. Sur. ..... 3,000,000 ft. gas 1,198 ft.; underreaming 1,300 ft.; shut down 1,340 ft.; hole full salt water.

Moncrief's No. 3 Todd, 330 ft. from S and E Sec. 29, Blk. VV ..... Location.

Taylor-Link's No. 3 Powell, 1,000 ft. S of No. 2, Sec. 52, Blk. BB, E.L.&R.R. Sur. ..... Spudding.

CULBERSON COUNTY

Deep Rock Oil Co.'s No. 3 Kloh, 380 ft. N and 1,388 ft. W Sec. 29, Blk. 59 ..... Moving in machine.

Hickey & Stiver's No. 1 C. O. Finley, 600 ft. N and 1,980 ft. W Sec. 20, Blk. 82 ..... Small oil show 1,331 ft.; shut down 2,275 ft.; hole full water.

West Coast Oil & Exploration Co.'s No. 1 McGregor, C NW Sec. 14, Blk. 81 ..... Total depth 720 ft.; straightening crooked hole.

Scott & Dittman's No. 1 Miller, 1,160 ft. N and 2,480 ft. E Sec. 1, Blk. 97, Public School Land ..... Rainbow 1,056 ft.; 300 ft. sulphur water 1,725 ft.; shut down 2,540 ft.; oil show 2,528 ft.; hole full sulphur water.

ECTOR COUNTY

Anderson's No. 1 fee, 1,320 ft. E along N line Sec. 19, and 150 ft. N at right angles with line Sec. 18, Blk. B-16, Public School Land ..... Location.

EL PASO COUNTY

Sillex's No. 1 Malone, 2,200 ft. SW and NW Sec. 46, J. M. Day Sur. ..... Shut down 1,010 ft.

EDWARDS COUNTY

A. M. Griffith's No. 1 Wardlow, Sec. 60, V-3, J. C. Clift Sur. ..... Cleaning out 2,400 ft.

FISHER COUNTY

Bickerstaff et al's No. 1 McWhirter, 2,640 ft. E and 150 ft. N of SW cor. of Sec. 295, Blk. 2, H.&T.C. Sur. ..... Shut down 2,000 ft. for orders.

Cranfill & Reynolds' No. 1 Flanagan, 990 ft. from S and W of Sec. 300, Blk. 1, B.B.B.&C. Sur. ..... Rigging up.

Gillman-McMurray & French's No. 1 Cleveland, 781 ft. N and 1,336 ft. W of SE cor. Sec. 116, Blk. 2, H.&T.C. Sur. ..... Shut down 3,606 ft.

Magnolia Pet. Co.'s No. 1 Lee, Sec. 357, 2,310 ft. from N and 4,286 ft. from W ..... Drlg. 1,010 ft.

Mesa Oil Co.'s No. 1 Griffin, 849 ft. N and 465 ft. E of NE cor. Sec. 20, School Land ..... Shut down 2,985 ft.

Midwest Oil Co.'s No. 1 Steele, 660 ft. from S, 440 ft. from W Sec. 210, Blk. 1 ..... Location.

Roeser & Pendleton's No. 1 Johnson, 330 ft. from N, 3,870 ft. from W Sec. 71, Blk. 1, H.&T.C. ..... Location.

Roeser & Pendleton's No. 2 Haught, Sec. 191, Blk. 1, 590 ft. from N and 1,320 ft. from W ..... Drlg. 1,305 ft.

The Texas Company's No. 2 Stephens, 330 ft. from N and W of S half SW Sec. 79, Blk. 1, H.&T.C.R.R. Sur. ..... Location.

GARZA COUNTY

Bell Thompson's No. 1 Tuffing, 330 ft. from S, 2,310 ft. from E Sec. 10, Blk. 6, H.&G.N. ..... Location.

Emerald Oil Co.'s No. 1 J. C. Bargsley, 2,310 ft. from E and 330 ft. N of SW cor. Sec. 135, Blk. 5, H.&G.N. ..... Rigging up.

Emerald Oil Co.'s No. 1 J. S. Reed, 990 ft. W and 330 ft. N of SE cor. Sec. 135, Blk. 5,, H.&G.N.R.R. Sur. ..... T. D. 2,546 ft.; 300 ft. oil in hole; T. P. 2,527 ft.; swabbed 66 bbls. in 6 hours after shot; shot 180 qts. 2,485-95 ft. and 2,503-40 ft.; swabbed 35 bbls. oil and 1 bbl. salt water; preparing to pump.

Gulf Prod. Co.'s No. 1 Street, C Sec. 7, Blk. 5, H.&G.N. R.R. Sur. ..... Drlg. 1,575 ft.

GLASSCOCK COUNTY

A. & F. Oil Co.'s No. 1 Turner, 2,310 ft. from N and 330 ft. from E Sec. 19, Blk. 33, Twp. 2s, T.&P. Sur. ..... Drlg. 1,320 ft.

California Co.'s No. 1 Turner, 2,310 ft. from N and E Sec. 46, Blk. 33, Twp. 2s ..... Rigging up.

Chas. Daniel et al's No. 1 Meek, 2,310 ft. W and 1,600 ft. N of SE cor. Sec. 7, Blk. 34, Twp. 3s, T.&P. Sur. ..... Shut down 500 ft.

Gibson-Johnson's No. 1 Dean, 1,320 ft. S and E of NW cor. Sec. 2, Blk. 33, Twp. 2s, T.P.R.R. Sur. ..... Top salt 1,075 ft.; top lime 2,560 ft.; drlg. 2,760 ft.

Houston Oil Co.'s No. 1 McDowell, 330 ft. from N and 2,310 ft. from E Sec. 30, Blk. 33, Twp. 2s ..... Drlg. 1,871 ft.

Kirby Pet. Co.'s No. 1 Phillips, Sec. 23, Blk. 33, Twp. 2s, 330 ft. from N and 2,310 ft. from W. ..... Shut down 160 ft.

Midwest Oil Co.'s No. 1 Edwards, 330 ft. from S, 2,259 ft. from E Sec. 20, Blk. 34, T.&P.R.R. Sur. ..... Location.

Penn Oil Co.'s No. 1 Schaffer, 1,320 ft. from S, 2,640 ft. from E Sec. 4, Blk. 32, Twp. 3s, T.P.R.R. Sur. ..... Rig.

Texas State Oil Co.'s No. 1 Coffey, 330 ft. from S and 990 ft. from E Sec. 19, Blk. 34, Twp. 2s ..... Drlg. 1,220 ft.

World Oil Co.'s No. 3 McDowell, Sec. 21, Blk. 34, Twp. 2s, 990 ft. from N, 2,310 ft. from W ..... Location.

HOWARD COUNTY

Amerada Pet. Corp.'s No. 10 Roberts, Sec. 137, Blk. 29, 990 ft. from N and 330 ft. from E ..... Show oil 2,912-18 ft.; drlg. 2,947 ft.; 800 ft. oil in hole from 2,918-31 ft.

Amerada Pet. Corp.'s No. 11 Roberts, 650 ft. from N and 200 ft. from E Sec. 128, Blk. 29, W.&N.W.R.R. Sur. ..... Drlg. 420 ft.

Amerada Pet. Corp.'s No. 2 Stewart, 330 ft. from S, 990 ft. from E Sec. 130, Blk. 29, W.&N.W.R.R. Sur. ..... Rigging up.

California Co.'s No. 7 Roberts, 874 ft. S, 990 ft. E Sec. 137, Blk. 29, W.&N.W.R.R. Sur. ..... Spudded and shut down.

O. Chalk's No. 4 fee, 1,650 ft. S and W of Sec. 124, Blk. 29, W.&N.W.R.R. Sur. ..... Spudding.

Cranfill & Reynolds' No. 2 Abrams, 243 ft. from W, 660 ft. N of No. 1 Sec. 3, Blk. 32, Twp. 2s ..... Location.

Cosden Oil Co.'s No. 5 Roberts-A, Sec. 129, Blk. 29, 200 ft. from S and 2,440 ft. from E ..... Drlg. 900 ft.

F. H. E. Oil Co.'s No. 11-B Dora Roberts, 1,700 ft. S and 2,310 ft. E of NW cor. Sec. 137, Blk. 29, W.&N.W. Sur. ..... Total depth 2,615 ft.; fishing.

Fuhrman Pet. Co.'s No. 1 Read, 2,310 ft. N and 330 ft. E of SW cor. Sec. 41, Blk. 32, Twp. 1n, T.&P.R.R. Sur. ..... Building rig.

Gibson & Johnson's No. 1 Read, 660 ft. N and W of SE cor. Sec. 47, Blk. 30, Twp. 1n, T.&P.R.R. Sur. ..... Top pay 2,702-08 ft.; total depth 2,949 ft.; 1,500 ft. oil in hole; cleaning out; to shoot again.

Gulf Prod. Co.'s No. 6 Clay, 1,170 ft. from N and 150 ft. from W Sec. 155, Blk. 29, W.&N.W.R.R. Sur. ..... Location.

Houston Oil Co.'s No. 1 L. S. McDowell, 2,310 ft. W and 330 ft. S of NE cor. Sec. 30, Blk. 33, Twp. 2s, T.&P. R.R. Sur. ..... Location.

Howard Oil Corp.'s No. 2 Kloh et al, 990 ft. from S and E of NW Sec. 5, Blk. 32, Twp. 2s ..... Location.

Humble O. & R. Co.'s No. 3 Clay, Sec. 133, Blk. 29, 1,650 ft. from N and 330 ft. from W ..... Show oil 2,933-40 ft.; total depth 2,964 ft.; show oil 2,933-40 ft. and 2,944 ft.

Laurel Oil & Gas and Cosden Oil Co.'s No. 11 Roberts, 2,490 ft. N and 450 ft. W of SE cor. Sec. 136, Blk. 29, W.&N.W.R.R. Sur. ..... Location.

Magnolia Pet. Co.'s No. 2 Hyman, 1,320 ft. W and 1,220 ft. N of SE cor. Sec. 88, Blk. 29, W.&N.W. Sur. ..... Cleaning out 1,317 ft.; bailed 15 bbls. oil 12 hours after shot; preparing to pump.

Magnolia Pet. Co.'s No. 13 Dora Roberts, 2,440 ft. N and 1,650 ft. E of SW cor. Sec. 136, Blk. 29, W.&N.W. Sur. ..... Shut down 2,927 ft.

Marland Prod. Co.'s No. 3 Clay-F, 250 ft. S and 660 ft. W of NE cor. Sec. 138, Blk. 129, W.&N.W.R.R. Sur. ..... Shut down 2,675 ft. with show oil 2,595-2,675 ft.

McGinley & Seigler's No. 1 Barnett, 330 ft. S and E of NW cor. Sec. 928, Blk. 29, W.&N.W.R.R. Sur. ..... Shut down 771 ft.

McGinley et al's No. 2 Hyman, Sec. 92, Blk. 29, W.& N.W.R.R. Sur. ..... Rigging up.

Merriwether's No. 1 Smith, 150 ft. from S, 2,490 ft. from W Sec. 45, Blk. 33 ..... Drlg. 400 ft.

Merrick & Lamb's No. 8 Clay, 1,120 ft. from S, 1,100 ft. from E line of Sec. 126, Blk. 29, W.&N.W.R.R. Sur. ..... Shut down 375 ft.

Moody Corp.'s No. 14 Roberts-E, Sec. 136, Blk. 29, 1,650 ft. from N, 990 ft. from E ..... Total depth 1,432 ft.; preparing to

Plymouth Oil Co.'s No. 4 Abrams, 330 ft. from N and 1,650 ft. from W Sec. 5, Blk. 32, Twp. 2s ..... Location.

Pure Oil Co.'s No. 1 Scrivner, 990 ft. E, 330 ft. N of SW Sec. 4, Blk. 32, Twp. 2s, T.&P.R.R. Sur. ..... Drlg. 1,280 ft.

Schermerhorn Oil Co.'s No. 6 D. Roberts-A, 1,650 ft. S and 330 ft. W of NE cor. Sec. 137, Blk. 29, W.& N.W.R.R. Sur. ..... Shut down 3,047 ft.; top pay 2,911 ft.; to test; preparing to pump.

Superior Oil Co.'s No. 14 Dora Roberts-B, 2,310 ft. E and 330 ft. S of NW cor. Sec. 137, Blk. 29, W.&N.W. Sur. ..... Shut down 2,601 ft.
Superior Oil Co.'s No. 15 Dora Roberts-B, 2,310 ft. S and 330 ft. E of NW cor. Sec. 137, Blk. 29, W.&N.W. R.R. Sur. ..... Fishing 2,565 ft.
Ward Oil Co.'s No. 7 Roberts, 2,310 ft. N and 330 ft. E of SW cor. Sec. 137, Blk. 29, W.&N.W.R.R. Sur. ..... Shut down 2,645 ft.; top pay 2,563 ft.; fishing.

HUDSPETH COUNTY

Western States Oil Co.'s No. 1 Lockhart & Roseborough, C SE Sec. 5, School Blk. 21 ..... Drlg. 1,325 ft., black lime.
California Co.'s No. 1 University, 3,821 ft. N and 2,554 ft. E of SW cor. Sec. 19, Blk. E ..... Total depth 1,640 ft.; straight-reaming.
Western States Oil Co.'s No. 1 Moore, C SE Sec. 16, Blk. 71, Twp. 6, T.&P. Sur. ..... Shut down 2,685 ft.; fishing job.
Western States Oil Co.'s No. 1 Gardner & Moseley, NE NW Sec. 12, Blk. 18 ..... Shut down 3,140 ft.; fishing.

IRION COUNTY

Crawford Oil Co.'s No. 1 Williams, 450 ft. from N, 150 ft. from W Subd. 8 ..... Spudded and shut down.
Kimbrough & Flinchbaugh's No. 1 Tankersley, 160 ft. S and 200 ft. W of NE cor. Sec. 712, Ford Willig Sur. ..... Show oil 1,318-29 ft.; total depth 1,329 ft.; swabbing 15 bbls.; underreaming; 500 ft. fluid in hole, 40 per cent water; bailing 8 bbls. per day; preparing to pump.
Pecos Valley Oil Co.'s No. 2 Stocks, Sec. 19, Blk. 3, 1,020 ft. from S and W, H.&T.C. Sur. ..... Fishing 1,200 ft.
Webb's No. 2 Nutt, 200 ft. from N and 711 ft. from E Subd. 5 ..... Location.
Kingwood Oil Co. et al's No. 1 J. D. Suggs, SE NW SE Sec. 19, Blk. 7, H.&T.C. Sur. ..... Drlg. 7,092 ft.
Whitmer et al's No. 1 Meyers, 990 ft. from S and E Sec. 10, Blk. 17, H.&T.C.R.R. ..... Drlg. 1,280 ft.

JEFF DAVIS COUNTY

J. K. Hughes Dev. Co.'s No. 2 Means, 1,622 ft. N line, 600 ft. W line Sec. 345, H.&T.C. Sur. ..... Show gas 3,271 ft.; fresh water 3,000-05 ft.; underreaming 5 3/16-in. casing; drlg. 4,005 ft.; 600 ft. fresh water 4,000-26 ft.

JONES COUNTY

J. H. Adsit et al's No. 1 Swenson, C of NE of SE Sec. 193, B.B.B.&C. Sur. ..... Location.
Cosden & Herbert Oil Co.'s No. 1 Bickley, 320 ft. N and 310 ft. E of SW cor. S half NW Sec. 50, Blk. 18, T.&P. Sur. ..... Rigged up and shut down.
Cosden-Herbert et al's No. 3 Bickley, 330 ft. N and W of SE cor. of S half NW Sec. 50, Blk. 18 ..... Spudded.
W. G. Clark et al's No. 1 Collins, 330 ft. S and E of NW cor. Sec. 29, Blk. 18, T.&P.R.R. Sur. ..... Rig.
Humble Oil & Ref. Co.'s No. 2 Bickley, 330 ft. S and W of NE cor. of SW Sec. 50, Blk. 18, T.&P.R.R. Sur. ..... Drlg. 860 ft.
McGinley Corp.'s No. 1 Whittemore, 660 ft. N and W of SE cor. SE NE Sec. 39, B.B.B.&C. ..... Underreaming at 2,590 ft.
McNeeley et al's No. 1 Roscoe Bland, 1,175 ft. N and 240 ft. W of SE cor. Subdivision 30, A-164, DeWitt Co. School Land ..... Spudded and shut down.
Phillips Pet. Corp.'s No. 2 M. C. Lan, 990 ft. from N and W line Sec. 15, Blk. 19, T.P.R.R. Sur. ..... Drlg. 410 ft.
Sedgwick Oil & Gas Co.'s No. 1 Brown, 660 ft. N and 1,320 ft. E of SW cor. Sec. 9, Blk. 1, T.&N.O. Sur. ... Location.
Texas Pacific Coal & Oil Co.'s No. 1 Smith, 1,822 ft. S and 2,043 ft. E of SW cor. Sec. 51, Blk. 18, T.&P. ..... Location.
The Texas Company's No. 2 Camp, 2,829 ft. N and 323 ft. W of SE cor. Camp. 189.5-acre lease, Sec. 13, T.&P. Sur., Blk. 19 ..... Drlg. 1,950 ft.
The Texas Company's No. 3 Camp, 1,189 ft. S and 326 ft. W of NE cor. of Sec. 13, Blk. 19, T.&P. ..... Shut down 2,545 ft.
U. L. Tomberlin's No. 1 Horn, 1,980 ft. N and 600 ft. E of SW cor. of 502 ac. of Penney Sur. A-283 ..... Shut down 2,507 ft.
E. M. Treat Oil & Gas Co.'s No. 1 Hodge, 750 ft. S and 2,714 ft. W of NE cor. of S half A. Bell Sur. ..... Drlg. 1,865 ft.
W. D. Wells et al's No. 1 Britton, 150 ft. N and 890 ft. E SW cor. 640-ac. tract, H.&W. Sur. 354-355 ..... Drlg. 3,070 ft.
White Eagle Oil & Ref. Co.'s No. 1 W. B. Teague, 933 ft. N and W of SE cor. Sec. 30, Austin & Williams Sur. No. 339 ..... Shut down 2,410 ft.

KIMBLE COUNTY

C. L. Bryant and others' No. 1 Lambert, 700 ft. from N and W line of F. Lotta Sur. ..... Location.
Lindsay Bros.' No. 1 Anderson, Sec. 167, 1,320 ft. from N and E ..... Fishing 537 ft.
McLean & Jamison's No. 1 Cannon, 1,940 ft. N and 300 ft. W of SE cor. Robert Cochran Sur. ..... Drlg. 790 ft.

LOVING COUNTY

Lockhart & Co.'s No. 2 Bowen-Wells, 990 ft. NW and 330 ft. SE Sec. 92, Blk. 1, W.&N.W.R.R. Sur. ..... Top salt 725 ft.; drlg. 960 ft.
Lockhart & Co.'s No. 1 Hayzell, 2,792 ft. SW of NE line and 660 ft. NW of SE line Sec. 84, Blk. 33, H.&T.C. R.R. Sur. ..... Top salt 700 ft.; drlg. 2,678 ft.
Lockhart & Co.'s No. 2 Hayzell, 330 ft. from NE and SE line of Sec. 84, Blk. 33, H.&T.C.R.R. Sur. ..... Top salt 700 ft.; drlg. 3,910 ft.
Lockhart & Co.'s No. 1 Johnson, 660 ft. S and 1,980 ft. W of NE cor. Sec. 20, Blk. 56, Twp. 1, T.&P.R.R. Sur. ..... Top salt 1,110 ft.; shut down 3,328 ft.
Lockhart & Co.'s No. 1 Wheat-H, 990 ft. from NE and SE lines Sec. 85, Blk. 33, H.&T.C.R.R. Sur. ..... Top salt 720 ft.; set 8¼-in. casing 2,295 ft.; show oil 4,147 ft.; swabs 10 bbls. per day; total depth 4,197 ft.; shot 110 quarts 4,150-80 ft.; flowing 2 bbls. salt water hourly; averaging 10 bbls. oil per day on swab.

LYNN COUNTY

George McCamey's No. 1 Edwards, 165 ft. N and E Sec. 5, Blk. 2, L.S.&W. Sur. ..... Top salt 2,140 ft.; oil show 1,580-90 ft.; cem. 8¼-in. casing 2,500 ft.

MENARD COUNTY

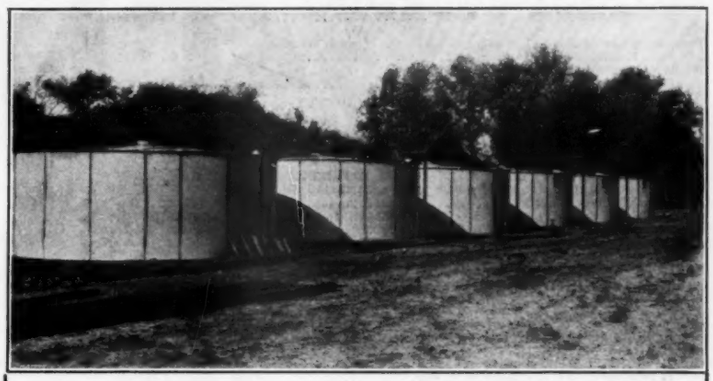
Cromwell & Duffey's No. 1 Winslow, C SE Sec. 32, T.&N.O. Sur. ..... Drlg. 1,625 ft.

MIDLAND COUNTY

Phillips Pet. Corp.'s No. 1 Stokes, 440 ft. S and W of NE cor. S. Beall Sur. No. 101, Blk. 37, Twp. 2s, T.P.R.R. Sur. ..... Top salt 1,610 ft.; top lime 3,720 ft.; fishing 3,915 ft.; 1,500 ft. fluid in hole; drlg. 4,200 ft.; rainbow oil 3,915 ft.
Shoupe et al's No. 1 Roy Parks, 1,320 ft. N and W Sec. 34, Blk. 41 ..... Top lime 4,744 ft.; shut down 4,980 ft.; to deepen.

MITCHELL COUNTY

The California Co.'s No. 2, Clark Lease No. 2, 2,190 ft. N and E of SW cor. Sec. 14, Blk. 28, Twp. 1n, T.P.R.R. Sur. ..... Top pay 2,962 ft.; show oil 2,405 ft.; 2,800 ft. oil in hole; cleaning out 3,125 ft.; swabbed 25 bbls. in 24 hours.
California Co.'s No. 7 Foster, Lease No. 1, Sec. 6, Blk. 29, Twp. 1s, T.P.R.R. ..... Drlg. 1,605 ft.
California Co.'s No. 1 Handley, 2,310 ft. from S, 1,650 ft. from E Sec. 1, Blk. 28, Twp. 1n, T.&P. Sur. ..... Drlg. 1,455 ft.



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MALONEY
ALONE

Seiger's No. 1 Scott, C of NE of SW Sec. 36, Blk. 17, S.P.R.R. Sur. ..... Shut down 730 ft.
Republic Prod. Co.'s No. 1 Scott, 330 ft. N and E of SW Sec. 20, Blk. 17, S.P.R.R. Co. ..... Drlg. 1,585 ft.
Simms Pet. Co.'s No. 1 Elwood, C SE of Sec. 29, Blk. 18, S.P.R.R. Sur. ..... Underreaming 10-in. casing 1,072 ft.; drlg. 4,427 ft.
Spence et al's No. 1 Brown, 2,040 ft. E and 1,320 ft. S NW cor. Sec. 37, Blk. 25, T.&P. ..... Top lime 1,265 ft.; shut down 2,000 ft.
Teas & Wheeler's No. 1 Radford, 1,320 ft. N and W of Sec. 1, Blk. 27, T.&P. Sur. ..... Drlg. 4,052 ft.
Westyde Investment Co.'s No. 1 Elwood, C SW Sec. 38, Blk. 16, S.P.R.R. Sur. ..... Top lime 1,290 ft.; drlg. 1,600 ft.

NOLAN COUNTY

L. G. Bradstreet et al's No. 1 Kuteman, C NW Sec. 95, Blk. X, T.&P. Sur. ..... Fishing 2,830 ft.
Phillips Pet. Co.'s No. 1 Plunkett, 330 ft. N and W of SE cor. NW Sec. 66, Blk. 33, T.&P. Sur. ..... Drlg. 2,435 ft.

PECOS COUNTY

H. Adams' No. 1 University, 1,650 ft. from N, 150 ft. from E Sec. 12, Blk. 17 ..... Drlg. 1,813 ft.; top salt 930 ft.
Cosby's No. 2 Smith, Sec. 24, Blk. 194, 1,650 ft. from N, 330 ft. from E, G.C.&S.F.R.R. Sur. ..... Drlg. 500 ft.
Buell & Hagan's No. 1 University-B, 330 ft. N and 2,310 ft. W of SE cor. Sec. 36, Blk. 18, University Land ..... 2,500,000 ft. gas; cleaning out; shut down 1,332 ft.; hole full oil; preparing to pump; swabbed 18 bbls. per day.
Cowboy Evans' No. 1 Pecos Valley, 2,310 ft. from NW line, 990 ft. from SW line of Sec. 36, Blk. 3, H.&T.C. R.R. Sur. ..... Shut down 360 ft.
Crowley's No. 1 Heiner, 2,400 ft. each way from N and E lines Sec. 589, G.C.&S.F.R.R. Sur. ..... Shut down 1,300 ft.
Clayton Williams' No. 1 Sanford, 160 ft. from NW line, 1,150 ft. from SW line Sec. 55, Blk. 10, H.&G.N. ... Drlg. 1,025 ft.
Doran & McGee's No. 1 Pecos Valley, Sec. 34, Blk. 3, H.&T.C. ..... Top salt 1,080 ft.; shut down 1,559 ft.; spraying 4 bbls. oil per day from 1,535-40 ft.; show gas 1,515 ft.
Gibson-Johnson's No. 1 Grace, 330 ft. N, 990 ft. from E Sec. 3, Blk. 179 ..... Drlg. 575 ft.
Independent Oil & Gas Co.'s No. 1 Iowa Realty Trust Co., 2,310 ft. each way NE SE line Sec. 23, Blk. 10, H.&G.N.R.R. ..... Drlg. 1,014 ft.
Jayhawk Oil Co.'s No. 1 Price, 1,310 ft. from W, 330 ft. from S, Sec. 6, Blk. 12, H.&G.N.R.R. Sur. ..... Location.
J. L. Kennedy's No. 1 Roberts, C of Sec. 78, Blk. 3, T.&P.R.R. Sur. ..... Location.
Sam Kitts and others' No. 1 Sherbino, 330 ft. from N and 990 ft. from W line Sec. 52, Blk. C-4, G.C.&S.F. R.R. ..... Drlg. 600 ft.
Seminole Oil Co.'s No. 1 Pecos Valley, Sec. 22, Blk. 10, 360 ft. from SW, 2,280 ft. from SE, H.&G.N. Sur. ... Location.
Mariand Oil Co.'s No. 1 University, Sec. 10, Blk. 17, 1,620 ft. from N, 1,020 ft. from E ..... Drlg. 370 ft.
Matador Oil Co.'s No. 3 Smith, 2,310 ft. from N and 990 ft. from E lines, Sec. 24, Blk. 194, G.C.&S.F.R.R. Sur. ..... Moving in machine.
Mauch & Kroger's No. 1 Holmes, Sec. 5, Blk. 178, T.C. Sur. ..... Shut down 1,442 ft.
McMan Oil & Gas Co.'s No. 6 Smith, C Sec. 25, Blk. 194, 2,127 ft. from N and 1,740 ft. from W ..... Shut down 1,753 ft.; top pay 1,748 ft.; flowed 80 bbls. in 10 hrs.
McMan Oil & Gas Co.'s No. 7 Smith, 660 ft. from S of C line, 990 ft. from E Sec. 25, Blk. 194 ..... Drlg. 1,135 ft.
R. E. Moore's No. 1 Arnold, 1,320 ft. from S and 660 ft. from E lines of Sec. 18, Blk. 1, H.&T.C.R.R. ..... Drlg. 645 ft.
Moncrief et al's No. 1 Tippett, 330 ft. from S, 330 ft. E of C Sec. 36, Blk. 12, H.&G.N. ..... Location.
W. A. Moncrief et al's No. 2 Tippett, 330 ft. from S and E lines of W half of Sec. 36, Blk. 12, H.&G.N. R.R. Sur. ..... Location.
Moncrief et al's No. 1 Toborg, 330 ft. from S, 330 ft. W of C of Sec. 539, Blk. 1 ..... Spudded and shut down.
Moncrief et al's No. 1 University, 1,470 ft. from N and 150 ft. from E Sec. 27, Blk. 18, University Land ..... Location.
Perrin et al's No. 1 Eaton, 150 ft. each way from NE and NW lines Sec. 27, Blk. 39, H.&T.C. Sur. ..... 18,000,000 ft. gas 1,490-1,502 ft.; spraying salt water from behind 8¼-in. casing set at 1,180 ft.; shut down 1,502 ft.; 5 3/16-in. casing set on bottom with last joint perforated; 18,000,000 ft. gas shut in.
Perren's No. 1 Peterson, 150 ft. from NW, 150 ft. from SW Sec. 34, Blk. 10, H.&T.N. ..... Location.
Phillip Pet. Corp.'s No. 1 Bowser, 250 ft. from N and E Sec. 77, Blk. OW, G.C.&S.F.R.R. ..... Drlg. 450 ft.
Plymouth Oil Co.'s No. 2 Perry, Sec. 29, Blk. 178, 330 ft. from N and E cor. ..... Set 6-in. casing; show oil and water; shut down 1,817 ft.; show oil 1,772-76 ft.; 1,200 ft. oil in hole from 1,792-96 ft.; hole fills at rate of 100 ft. per hour; swabbed 50 bbls. in 5 hours; shut down 1,830 ft.
Phillip Pet. Corp.'s No. 2 Monroe, 990 ft. from N and E of Sec. 39, Blk. 194, G.C.&S.F.R.R. Sur. ..... Location.
Phillips Pet. Co.'s No. 1 Pryor, 440 ft. S and E of NW cor. Sec. 78, Blk. OW, T.M.R.R. Sur. ..... Top pay 1,345 ft.; 400 ft. oil in hole; drlg. 1,742 ft.; hole full water.
Rio Pecos' No. 2 Yates, 5,130 ft. from E, 510 ft. from S Sec. 543, Blk. 1 ..... Shut down 1,060 ft.
Rowen & Tong's No. 1 McDonald, 1,170 ft. from N and 2,490 ft. from E Sec. 46, Blk. 2, H.&G.N. ..... Location.
Seminole Oil Co.'s No. 1 Cordova, 330 ft. from S and 2,434 ft. from E line of Sec. 51, Blk. 11, H.&G.N. ... Location.
B. J. Spikes' No. 1 George Brown, 2,490 ft. SE and SW line Sec. 8, Blk. 3 ..... Show oil 1,180-90 ft.; drlg. 2,119 ft.
Schumaker et al's No. 1 Williams et al, 330 ft. N of middle of S line Sec. 1, Blk. 117, G.C.&S.F. ..... Drlg. 1,270 ft.
Southern Crude O. P. Co.'s No. 1 Jackson T-139, Sec. 28, Blk. 3, 1,487 ft. from NE, 2,518 ft. from SE cor. .... Location.
Talbot and others' No. 1 Unsicker, 150 ft. each way from NE and SE cor. line of Sec. 25, Blk. 10, H.&G.N. Sur. ..... Material on ground.
Taylor Link Oil Co.'s No. 1 University, 330 ft. from S and E Sec. 30, Blk. 16, University ..... Slight show oil at 935 ft.; 250,000 ft. gas from 1,195 to 1,204 ft.; bailed 22 bbls. dead oil; total depth 1,628 ft.; top pay 1,613 ft.; flowing 115 bbls. per day; drlg. 1,470 ft.
Texas-Phillip's No. 1 Campbell, 1,320 ft. from SW, 330 ft. from SE, Sec. 46, Blk. 10, H.&G.N. ..... Location.
Taylor-Link's No. 2 University, 330 ft. from N and W of Sec. 31, Blk. —, University ..... Location.
Tidal Oil Co.'s No. 1 University, 1,320 ft. from S and W lines of Sec. 16, Blk. 20, University Land ..... Top salt 786 ft.; top lime 1,270 ft.; drlg. 1,470 ft.
Tidal Oil Co.'s No. 2 University, 2,970 ft. from N. 2,310 ft. from E Sec. 3, Blk. 18, University Land ..... Location.
Transcontinental Oil Co.'s No. 1 University, NE NW SW Sec. 18, Blk. 18 ..... Top lime 1,155 ft.; total depth 4,407 ft.
R. D. Webb's No. 1 fee, 1,900 ft. from E and 1,420 ft. N of SW cor. Sec. 105, Blk. OW ..... Location.

PRESIDIO COUNTY

L. C. Brite's No. 4 Brite, 271 ft. from N, 1,188 ft. from E Sec. 245, Blk. 4 ..... Drlg. 450 ft.
Eastland Oil Co.'s No. 1 Tootle, C Sec. 17, Blk. 1, D.P. R.R. Sur. ..... Spudded; shut down.
Phillips Pet. Co., Empire G. & F. Co., Delmar Co. and C. E. Miller's No. 1 Tootle Est., C NE Sec. 75, Blk. 3, D.&P.R.R. Sur. ..... Slight oil show and gas at 2,707 ft.; drlg. 3,312 ft.; show oil at 2,767 ft.

REAGAN COUNTY

Big Lake Oil Co.'s No. 1-C University, 2,598 ft. S and 250 ft. W of NE cor. Sec. 1, Blk. 2, University Land.. Shut down 2,636 ft.
Kemrow Co.'s No. 1 Sawyer Cattle Co., 1,320 ft. from N and 1,980 ft. from E line Sec. 8, J. G. Robinson Sur. ..... Location.

REEVES COUNTY

Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor. Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ..... Shut down 2,900 ft.; pipe out.
Earl Henby's No. 1 Brooks, 1,980 ft. N and 660 ft. W Sec. 16, Blk. 59 ..... Shut down 120 ft.
Southern Crude O. P. Co.'s No. 1 Kloh-Rumsey, 2,310 ft. N and W SE cor. Sec. 33, Blk. 51 ..... Hole full water 1,275 ft.; cem. 12½-in. casing 1,463 ft.; shut down 1,535 ft.
David R. Thompson's No. 1 A. A. Eddins, Sec. 9, Blk. C-1 ..... Fishing casing 5,658 ft.; underreaming 8¼-in. casing.
Robert Penn et al's No. 1 Bowles, 2,310 ft. SW of NE cor. Sec. 36, Blk. 50, Twp. 8, T.&P.R.R. Sur. ..... Top salt 1,725 ft.; hole full fluid 5,176 ft.; underreamed 6-in. cas. 5,225 ft.; shut down 5,612 ft.; 2 bbls. oil per day from 5,241-58 ft.
Lee O. White et al's No. 1 Kloh-Rumsey, 660 ft. S and E of NW cor. Sec. 5, Blk. 51, Twp. 10, T.&P. Sur. ... Cem. 10-in. casing 1,485 ft.; total depth 1,530 ft.

RUNNELS COUNTY

Herbert Oil Co.'s No. 1 Currie, 1,866 ft. SE of NW line, 335 ft. SW of NE line Gray Carroll Sur. ..... Shut down 2,125 ft.
Independent Oil & Gas Co.'s No. 1 Will Rollwitz, 330 ft. S and W of NE cor. S half M. Salinas Sur. No. 20½.. Drlg. 3,970 ft.; hole full salt water.
McLean et al's No. 1 G. W. Clayton, 150 ft. N line, 270 ft. from W line Sec. 135, E.T.R.R. ..... Shut down 1,185 ft.
Nourse & Tilton's No. 1 Cramer, 200 ft. S, 600 ft. E of NW cor. G.C.&S.F. Sur. No. 2 ..... Drlg. 3,966 ft.; underreaming 6-in. casing 3,850 ft.
Vacuum Oil Co.'s No. 4 McMillan, 555 ft. S and 717 ft. W of NE cor. Lot 22, Domingo Diaz Sur., No. 532 .... Location.

SCHLEICHER COUNTY

Fort McKavet's No. 1 Tisdale, Sec. 1,499, River Section, 3,630 ft. from S, 150 ft. from W ..... Set 6-in. casing 3,023 ft.; drlg. 3,140 ft.
Interstate's No. 1 Whitten, 1,320 ft. from N and W Sec. 35, Blk. LL, T.C.R.R. Sur. ..... Cleaning out 3,540 ft.
Underwood's No. 1 Tisdale, 2,095 ft. N and 1,185 ft. from E Sec. 74, Blk. LL ..... Spudded and shut down.

SCURRY COUNTY

Camp Spring Oil & Ref. Co.'s No. 3 Guinn, 1,300 ft. from S, 300 ft. from E Sec. 12, Blk. 3, H.&T.C.R.R. Sur. ..... Location.
Cottingham & Briscoe's No. 1 Truss, C SE Sec. 147, Blk. 97 ..... Location.
I. B. Mimms et al's No. 1 J. J. Koonsman, Sec. 216, Blk. 2, H.&T.C. Sur. ..... Spudded and shut down 300 ft.
G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ..... Shut down 3,150 ft.
Texas-Canadian's No. 1 Moore, 1,320 ft. from S and W Sec. 379, Blk. 97 ..... Location.

STERLING COUNTY

F. & G. Oil Co.'s No. 1 W. L. Foster, C SE Sec. 20, Blk. 12, S.P.R.R. ..... Show oil 1,296-98 ft. and 1,356-58 ft.; fishing 2,182 ft.; shut down 2,503 ft.

SUTTON COUNTY

Phillips Pet. Co.'s No. 1 A. G. Holman, 2,310 ft. S and 330 ft. W NE cor. Sec. 25, G.C.S.D.&N.G.R.R. Sur. .... Fishing 6,635 ft.; making 1,500,000 ft. gas 6,635 ft.
L. G. Priest's No. 1 Allison, 1,320 ft. N and E of SW cor. Sec. 52, Blk. A, T.&P. Sur. ..... Set 15-in. casing 530 ft.; drlg. 2,650 ft.

TAYLOR COUNTY

V. B. Jameson's No. 1 Webb, 1,170 ft. S and W of NE cor. Sec. 46, Lunatic Asylum Land ..... Drlg. 4,255 ft.
Magnolia Pet. Co.'s No. 1 Hammer ..... Drlg. 2,487 ft.
Root Drlg. Co.'s No. 1 Martin, 990 ft. E and 1,650 ft. N of SW cor. Sec. 20, Blk. 19, T.&P.R.R. Sur. ..... Fishing 2,475 ft.

TERRELL COUNTY

Big-Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M.-K.-T.R.R. Sur. ..... Spudded and shut down.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Blk. D-7, E.L.R.R. Sur. ..... Drlg. 2,540 ft.
Mrs. J. B. McPhee's No. 1 Sam Belt, C Sec. 78, Blk. D-7, E.L.&R.R. Sur. ..... Shut down 520 ft.
Milham Exploration Co.'s No. 1 Bassett, Sec. 76, Blk. Y, W. E. Robertson Sur. ..... Cem. 6⅝-in. casing 3,986 ft.; fishing 5,075 ft.
Woodley & Jones' No. 1 Pankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.&N.G.R.R. Sur. ..... Shut down 700 ft.

TERRY COUNTY

Kingsland O. P. Co.'s No. 1 Brownfield, C NW SW SW Sec. 7, Blk. 1-A, E.L.R.R. Sur. ..... Fishing bailer 5,080 ft.

TOM GREEN COUNTY

Cannon and others' No. 1 Rust, 990 ft. S, 990 ft. W of NE cor. of Sec. 745 ..... Rig.
Fitzgerald & Taliaferro's No. 1 Bennett, C SW Sec. 1,628, E. H. Ringer ..... Shut down 1,920 ft.
Williams et al's No. 1 Willeke, 2,500 ft. N and 75 ft. E

UPTON COUNTY

Dixie Oil Co.'s No. 30 Burleson, 990 ft. from N and 2,640 ft. from E Sec. 2, John Nidever ..... Location.

YOAKUM COUNTY

Weekly Oil Corp.'s No. 1 Knight, C NW Sec. 791, Blk. D, John Gibson Sur. ..... Drlg. 1,950 ft.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE Sec. 30, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ..... Shut down 4,850 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ..... Gas sand 2,491-2,520 ft.; tested 125,750 ft. gas; reset 8-in. 2,511 ft.; shut down 4,210 ft.
Producers Oil Co. et al's No. 1 Everett Bros., 2,310 ft. S and 330 ft. E of NW cor. Sec. 40, Blk. DB, C.C.S.D.&R.G.N.G. Sur. ..... Fishing 2,510 ft.
Dyar Bros. et al's No. 1 Wilson, 6,830 ft. N NE cor. Sec. 1, T.&P. Sur., thence 1,680 ft. E Sec. 115, Blk. E, G.C.&S.F. Sur. ..... Shut down 2,920 ft.
Valvert Oil Corp.'s No. 1 Bassett, C NE Sur. 47, Blk. Y .. Set 15½-in. casing 767 ft.; set 10-in. casing 1,510 ft.; shut down 3,760 ft.

The G&M Tester

10 Superior Features

This modern tool revolutionizes Rotary Drilling Methods. Positive, automatic, and easily operated. We have representatives in the field and will be glad to test any formation for you on short notice. Here are the ten points of superiority:

1. Easy to remove from hole.
2. Simplicity of operation.
3. Positive knowledge of valve opening.
4. Fluid can be circulated through entire Tester.
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6. Adaptability of packer, both in length and diameter.
7. Packer seats without fluid resistance.
8. Protected perforations until tool is seated.
9. Fully protected by issued Patents.
10. Economy of operation in lease feature.

Guaranteed

The G & M Well Tester is sold under guarantee to be as we say it is or money back. A test can be quickly taken, showing results as though well had been cased and hole bailed dry. You cannot afford to drill through favorable formations without testing them. Mail coupon now for literature and a representative to see you. If you need a test at once—phone us.

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Address _____
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WARD COUNTY

Atlantic & Delmar's No. 3 Hayzlett, 150 ft. each way from E cor. of S of W of Sec. 17, Blk. 5, H.&T.C. R.R. Sur. ..... Location.

Gulf Prod. Co.'s No. 2 Hutchins, 330 ft. N and E Sec. 7, Blk. O ..... Top salt 1,240 ft.; top pay 2,529 ft.; 2,000,000 ft. gas.

Barstow Oil & Gas Co.'s No. 1 Monroe, Sec. 50, Blk. 33.. Spudded and shut down.

Gulf Prod. Co.'s No. 5 O'Brien, 330 ft. each way NW of SW Sec. 18, Blk. F, G.M.M.B.&A. Sur. ..... Top salt 1,273 ft.; drlg. 2,765 ft.; flowing 150 bbls. daily; top pay 2,595 ft.

Gulf Prod. Co.'s No. 1 Wristen, 216 ft. NW, 1,107 ft. SE Sec. 18, Blk. 5 ..... Drlg. 950 ft.; top salt.

Kemper-Kimberlin's No. 1 Thompson, 1,470 ft. NE, 150 ft. NW Sec. 15, Blk. 5 ..... Location.

E. B. Lovelace et al's No. 1 Redman, 1,980 ft. NE of SW line and 1,980 ft. SE of NW line, Sec. 162, Blk. 34, H.&T.C.R.R. ..... Pulled 15-in. casing stuck in hole.

Penn & Atlantic's No. 1 Pecos Mercantile Co., Sec. 16, Blk. 34 ..... Drlg. 480 ft.

Shipley's No. 2 Hayzlett, 220 ft. SE and 1,570 ft. SW Sec. 17, Blk. 5, H.&T.C.R.R. Sur. ..... Spudding.

Shipley et al's No. 1 Monroe, 330 ft. SE SW Sec. 3, Blk. 1 ..... Location.

WINKLER COUNTY

American Maracaibo Co.'s No. 2 Hendricks-B, 1,980 ft. N and 1,650 ft. E of SW cor. Sec. 28, Blk. B-5 ..... Cem. 12½-in. casing 170 ft.; top lime 2,599 ft.; top pay 2,731 ft.; 2,000 ft. oil; increase 2,875 ft.; show water 2,928-31 ft.; running 6-in. casing 2,945 ft.; drlg. 3,070 ft.; flowing 100 bbls. fluid.

V. T. Bolin's No. 2 Brown et al, 2,000 ft. S and W of NE Sec. 4, Blk. B-5, Public School Land ..... Top salt 1,300 ft.; shut down 2,100 ft.; top salt 1,300 ft.

Cranfill & Pickrell's No. 2 Hutchins, 2,310 ft. S and W Sec. 47, Blk. 26 ..... Location.

Flandell Oil Co.'s No. 1 Carter, 640 ft. N, 2,220 ft. E of SW cor. Sec. 26, Blk. B-3 ..... Location.

Gulf Prod. Co.'s No. 1 Daugherty, 330 ft. S and W of NW and W of Sec. 22, Blk. 26 ..... Top lime 2,429 ft.; top pay 2,745-50 ft.; flowed 45 bbls., 35 per cent water; shut down 2,814 ft.; flowing 385 bbls. daily.

Gulf Prod. Co.'s No. 1 Clapp, 330 ft. S and W Sec. 87, Blk. 26 ..... Top lime 2,297 ft.; cem. 8¼-in. casing 2,302 ft.

Gulf Prod. Co.'s No. 3 Hendricks, 330 ft. from N and 2,310 ft. W Sec. 44, Blk. 26, Public School Land ..... Drlg. 765 ft.

Humble O. & R. Co.'s No. 12 Hendricks-C, 1,980 ft. N and 1,325 ft. E of SW cor. Sec. 10, Blk. B-12 ..... Top salt 1,580 ft.; top lime 2,478 ft.; cem. 8¼-in. casing 2,480 ft.; shut down 2,916 ft.; preparing to bail and test.

Humble Oil & Ref. Co.'s No. 13-C Hendricks, 440 ft. from S, 330 ft. from W Sec. 10, Blk. B-12 ..... Building rig.

Kermit Dev. Co.'s No. 1 Carter, 640 ft. S, 2,227 ft. W Sec. 27, Blk. B-3 ..... Shut down 400 ft. to cure title.

Liner Drlg. Co.'s No. 1 Campbell, 330 ft. from N and E cor. Sec. 2, Blk. B-5 ..... Drilling.

Magnolia Pet. Co.'s No. 2 Scarborough, 1,620 ft. N and 990 ft. W SE cor. Sec. 1, Blk. C-22 ..... Top salt 1,125 ft.; gas show 2,825 ft.; fishing 2,825 ft.

Marland Oil Co.'s No. 1 Morton-A, 330 ft. N and E of Sec. 16, Blk. B-12 ..... Location.

Skelly Oil Co.'s No. 3 Daugherty, 330 ft. W, 1,650 ft. S Sec. 22, Blk. 26, Public School Land ..... Rigging up rotary.

Skelly Oil Co.'s No. 4 Daugherty, 990 ft. S, 330 ft. W Sec. 22, Blk. 26 ..... Running 12½-in. casing 197 ft.

Skelly Oil Co.'s No. 5 Daugherty, 1,326 ft. W, 2,310 ft. S Sec. 22, Blk. 26 ..... Location.

Skelly Oil Co.'s No. 2 Hendricks-C, 1,320 ft. N and 2,310 ft. W of SE cor. Sec. 10, Blk. B-12 ..... Top lime 2,636 ft.; show oil 3,034 ft.; hole full sulphur water 3,030-39 ft.; total depth 3,100 ft.; flowing 12,000 bbls. daily; fishing tools 3,126 ft.

Skelly Oil Co.'s No. 4 Leck, 2,310 ft. N and 1,320 ft. E of SW cor. Sec. 22, Blk. 26, School Land ..... Location.

Southern Crude O. P. Co.'s No. 5 Hendricks T-67-2-D, 990 ft. from W, 2,310 ft. from S, Sec. 28, Blk. 26.... Top lime 2,593 ft.; cem. 8¼-in. casing 2,605 ft.

Simms Pet. Co.'s No. 2 Sealey, 2,434 ft. S and 990 ft. W of NE cor. Sec. 50, G.M.M.&A. Sur. ..... Rotary rig.

Southern Crude O. P. Co.'s No. 3 Hendricks T-88-CX, 2,310 ft. N and 330 ft. W of SE cor. Sec. 21, Blk. 26.. Top lime 2,457 ft.; cem. 8¼-in. casing 2,469 ft.; drlg. 2,796 ft.; flowing 112 bbls. oil, 90 per cent water.

Southern Crude O. P. Co.'s No. 6 Hendricks T-88-N, 1,320 ft. N and W of SE cor. Sec. 28, Blk. 26, School Land ..... Top lime 2,420 ft.; total depth 2,-829 ft.; plugged back 2,106 ft.; fishing.

Southern Crude O. P. Co.'s No. 2 Hendricks T-88-P, Sec. 28, Blk. 26 ..... Top lime 2,532 ft.; cem. 8-in. casing 2,549 ft.; drlg. 2,926 ft.

Southern Crude O. P. Co.'s No. 3 Hendricks T-88-R, 1,320 ft. N and E of SW Sec. 27, Blk. 26 ..... Top lime 2,365 ft.; gas show 2,630 ft.; top pay 2,655 ft.; flowing 20 bbls. hourly; total depth 2,770 ft.; rigging up rotary.

Southern Crude O. P. Co.'s No. 4 Hendricks T-90, 2,310 ft. S and E of Sec. 47, Blk. 26 ..... Location.

Texas Canadian Oil Co.'s No. 1 Kloh-Rumsey, 1,320 ft. N and E of SW cor. Sec. 35, Blk. 46, T.&P.R.R. Sur... Shut down 4,011 ft. for orders.

Tidal Oil Co.'s No. 1 Scarborough, 330 ft. S and E of NW SE SE Sec. 1, Blk. C-22 ..... Cem. 6-in. casing 2,921 ft.; rigging up standard tools; top pay 2,945-50 ft.; drlg. 3,035 ft.; 165 bbls. daily.

PUMPS FOR BRADFORD FIELD

OIL CITY, Pa., June 20.—Receipt of an order for 18 high-pressure pumps for use in water flooding in the Bradford Field was announced by the National Transit Pump & Machine Co., a subsidiary of the National Transit Co.

RECALLS TULSA'S FIRST WELL

Tuesday, June 25, was the twenty-eighth anniversary of the discovery of oil at Red Fork, a suburb of the present city of Tulsa. It was a 90-bbl. initial producer from sand at 548 feet. Dr. Fred C. Clinton and Dr. J. C. W. Bland, both of Tulsa, financed the operation. The oil was shipped by tank car to the Neodesha, Kans., refinery and the railroad tareff ate up most of the $1 per barrel received for the oil.

ALBANIAN OIL RIGHTS

A state monopoly on oil sales has been granted by the Albanian government to the Italian company Agip. The Anglo-Persian company did not compete for the monopoly and the Standard companies withdrew from the competition under a private agreement with Agip that it should purchase all oil sold from them. Agip will pay the government $300,000.

OKLAHOMA FIELDS

(Continued from Page 72)

Company, farm—	Location	Wells	Prod.
Phillips:			
Dunaway	14-9-5	1	20
Reese	8-9-5	1	667
Prairie:			
Baker	24-9-5	5	940
Davis	13-9-5	3	373
Graham, C.	3-9-5	2	5
Graham, O.	10-9-5	4	825
James	6-9-6	2	0
Hartman	18-9-6	1	4,340
Stidham	11-9-5	9	931
Prairie & Skelly:			
Campbell	6-9-6	7	3,320
Prairie & Whitney:			
Harjo	24-9-5	1	25
Shaffer:			
Clark	1-9-5	2	187
Shell:			
Bayless	17-9-5	1	10
Hearn	13-9-5	1	93
Spencer	12-9-5	2	1,630
Sinclair:			
Alexander	36-10-5	1	700
Foreman	18-9-5	1	15
Hollins	12-9-5	1	25
Miller	24-9-5	1	720
Sango	2-9-5	4	1,350
Skelly:			
Mays	1-9-5	4	754
Shepard	6-9-6	4	1,165
Spencer	12-9-5	1	98
Skelly & Atlantic:			
Cherry	6-9-6	4	339
Lottie	6-9-6	4	1,462
Varman	5-9-6	1	41
Superior:			
Ingram	1-9-5	3	1,217
Walker	2-9-5	2	1,340
Texas:			
Anderson	2-9-5	8	109
Brown	10-9-5	8	75
James	6-9-6	2	240
Rogers	5-9-5	5	920
Wilmott	10-9-5	6	93
Tidal:			
Walker	35-10-5	3	1,450
Watkins	9-9-5	7	2,220
Twin States:			
Barker	12-9-5	3	30
Hern	2-9-5	2	60
Total		308	78,075

Seminole Pool

Amerada:			
Fixico	23-9-6	2	92
Killingsworth	23-9-6	4	499
Rentie	23-9-6	3	306
Atlantic:			
Cudjo, N.	35-9-6	3	484
Barnsdall:			
Carter	24-9-6	6	134
Henry	14-9-6	2	497
Jones	34-9-6	4	455
Carter Oil:			
B. Carter	24-9-6	2	35
F. Carter	23-9-6	3	132
Creamer	34-9-6	1	7
Cudjo, B.	35-9-6	4	110
Cudjo, W.	34-9-6	1	115
Gilliland	27-9-6	1	175
Grisso	23-9-6	4	190
Grisso, M.	15-9-6	1	220
Killings, G. F.	14-9-6	4	35
Killings, M. E.	23-9-6	12	4,300
Knapp	13-9-6	1	32
Lukes	27-9-6	5	600
Pounder	34-9-6	2	195
Simpson	35-9-6	2	132
Strothers	34-9-6	4	420
Vierson	23-9-6	1	17
Empire:			
Gross	25-9-6	1	45
Wilson	34-9-6	2	216
Gypsy:			
Butler	35-9-6	4	618
Carter	24-9-6	8	538
Cudjo	34-9-6	4	545
Fixico	26-9-6	7	70
Harjo	25-9-6	3	388
Wolfe	26-9-6	5	494
Independent:			
Fixico, P.	23-9-6	2	410
Harjo	25-9-6	2	60
Butler	35-9-6	3	900
Fixico, T.	26-9-6	5	231
Jones	26-9-6	4	294
I. T. I. O.:			
Allen	25-9-6	2	38
Bowlegs	26-9-6	12	2,055
Goodin	23-9-6	4	367
Harjo	23-9-6	3	41
James	24-9-6	2	80
Reed	24-9-6	1	8
Kingwood:			
Johnson	22-9-6	3	418
Magnolia:			
Boren	2-8-6	1	4
Franks	25-9-6	3	128
Mid-Continent:			
Rentie	14-9-6	9	550
Tayeche	24-9-6	5	160
Phillips:			
Strothers	27-9-6	2	90
Prairie:			
Cudjo	35-9-6	3	552
Franks	25-9-6	6	765
Giblet	35-9-6	3	1,400
Gross	25-9-6	5	35
Mason	36-9-6	1	60
Spencer	13-9-6	1	6
Strothers	27-9-6	8	1,805
Tiger	1 8-6	1	31
Pure Oil:			
Strothers	26-9-6	17	4,447
Strothers, B.	36-9-6	4	662
Strothers, C.	34-9-6	1	382
Shell:			
Harber	22-9-6	1	227
Lasley	22-9-6	2	35
Sinclair:			
Carter	13-9-6	2	23
Cudjo "A"	35-9-6	6	710
Cudjo "B"	35-9-6	4	647
Dicey	22-9-6	2	420
Fixico	23-9-6	4	460
Superior:			
Cudjo	35-9-6	4	114
Noble	15-9-6	1	1
Texas:			
Mayhue	14-9-6	1	40
Strothers	2-9-6	1	70
Tidal:			
Carter	24-9-6	4	172
Fixico	26-9-6	7	1,440
Harjo	25-9-6	1	16
Harjo, T.	23-9-6	3	45
Turman:			
Cudjo	35-9-6	4	347
Grisso	35-9-6	1	58
Jones	34-9-6	4	1,216
Total		272	34,114

East Seminole Pool

Barnsdall:			
Keypaya	7-9-7	1	21
Continental:			
Johnson	18-9-7	1	2,366
Gypsy:			
Harjo	18-9-7	1	597
Magnolia:			
Drewey	18-9-7	1	10
Marland:			
Buring	17-9-7	1	46
Marland & Sinclair:			
Perry	18-9-7	3	173
Prairie:			
Stubbs	18-9-7	1	6
Shaffer:			
Hargiu	19-9-7	1	15
Sinclair:			
Coody	18-9-7	1	570
D. Coody	17-9-7	1	580
G. Johnson	18-9-7	1	40
Thompson (B)	18-9-7	1	705
J. Warrior	17-9-7	1	45
S. Warrior	17-9-7	1	75
Total		14	5,243

Searight Pool

Amerada:			
Johnson	4- 9-6	1	24
Strothers	3- 9-6	2	292
Barnsdall:			
Jackson	5- 9-6	2	30
Carter:			
Davis	4- 9-6	3	335
Frazier	3- 9-6	5	760
Kiker	2- 9-6	1	17
Stewart	10- 9-6	1	450
Mandler	3- 9-6	2	5
Slick	11- 9-6	2	1,445
Scott	26-10-6	1	12
I. T. I. O.	11- 9-6	1	465
Carter et al:			
Strothers	11- 9-6	2	1,100
Skiff	10- 9-6	1	125
Gypsy:			
Cudjo	4- 9-6	2	627
Nevins	32-10-6	1	657
Magnolia:			
Varnum	32-10-6	2	888
Varnum	5- 9-6	1	14
Mid-Continent:			
Grayson	34-10-6	4	25
Saloche	33-10-6	6	330
Mid-Continent & Homaokla:			
Nevins	32-10-6	4	1,355
Papoose:			
Marks	32-10-6	1	532
Pine:			
Lula	4- 9-6	1	14
Prairie:			
Cannon	33-10-6	1	2
J. Carter	10- 9-6	1	3
Houch	33-10-6	1	3
Hurford	33-10-6	1	4
Kincaid	33-10-6	2	60
Wimer	22-10-6	1	15
Pure:			
Aldridge	3- 9-6	4	820
Shell:			
Strothers	3- 9-6	4	150
Sinclair:			
Polly	3- 9-6	4	1,480
Superior:			
Varnum	4- 9-6	1	30
Texas:			
Fleet	4- 9-6	1	20
Twin States:			
Varnum	4- 9-6	2	125
Wilcox:			
Chupco	4- 9-6	7	190
Total		77	12,401

Production of St. Louis Pool

Production of St. Louis and Asher Pools by companies and leases for June 27 follows:

ST. LOUIS POOL

Company and farm—	S.T.R.	Well	Prod.
Atlantic-Independent:			
Burke	16-7-4	1	530
Barnsdall:			
Stahl	30-7-5	3	1,033
Blackwell-Omar:			
Cherry	25-7-4	3	680
Darby:			
Youngblood	16-7-4	1	345
Gypsy:			
Brune	25-7-4	4	63
Collins	25-7-4	4	535
Dodson	26-7-4	4	145
Green	17-7-4	1	340
LeClair	28-7-4	4	2,105
Roseman	26-7-4	4	372
Stahl	30-7-5	8	847
Home Gas:			
Town Lot	14-7-4	1	190
Houston:			
Wyatt	17-7-4	1	321
Independent:			
Borrow	1-7-4	2	1,525
Blandin	30-7-5	5	995
Youts	19-7-5	8	6,990

(Continued on Next Page)

A Job That They Thought Couldn't Be Done

The drillers had hit quicksand on Difford No. 1. The cellar and casing would not "stay put". They knew they had to get cement around the pipe to hold it—but they didn't see how any cement could do the job!

Fortunately, they used Oilmax Cement—and it proved beyond a doubt that the job *could be done!* Oilmax was pumped into the well and it hardened quickly, in spite of the quicksand. Within 72 hours drilling was resumed. Again, this remarkable oil-well cement had demonstrated its ability to get a job under the most adverse conditions.

Oilmax is a specially-processed Portland Cement that gets as hard in 24 hours as ordinary cement in 10 days. It sets up promptly and normally even under those unfavorable conditions common to bottom-hole work. *Requires no admixtures or accelerators* — always hardens *evenly* — slips quickly and easily thru pump.

With 50% water by weight, Oilmax produces over 1500 pounds per square inch compressive strength in 24 hours, more than 2500 pounds in 48 hours, and an ultimate strength exceeding 5000 pounds.

Write, wire or phone us if your dealer does not stock Oilmax. Shipped in mixed cars with Ash Grove Cement.

Produced ONLY by

ASH GROVE LIME & PORTLAND CEMENT CO.

Founded in 1882

KANSAS CITY, MO. OMAHA, NEBR.

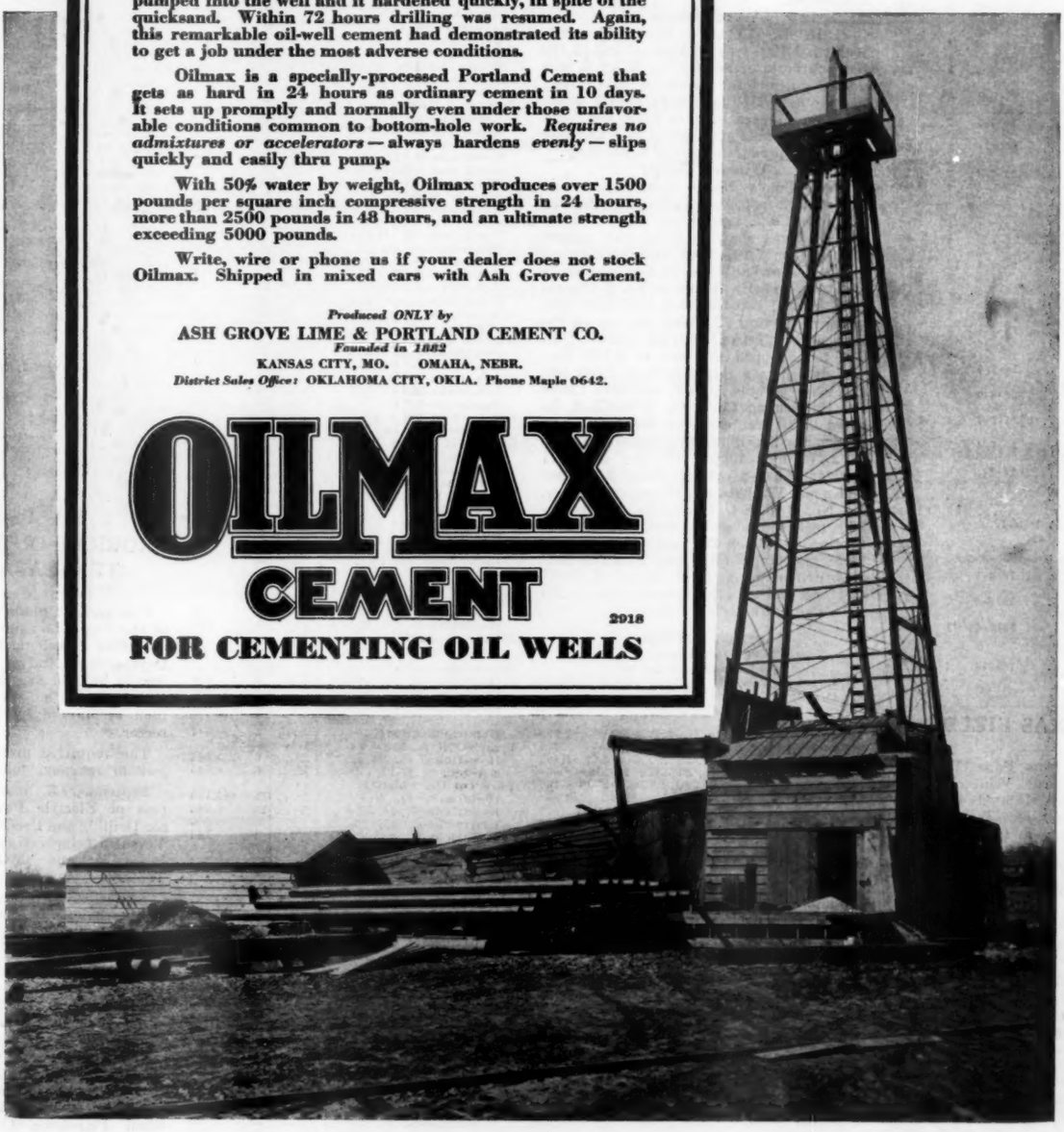
District Sales Office: OKLAHOMA CITY, OKLA. Phone Maple 0642.

OILMAX CEMENT

2918

FOR CEMENTING OIL WELLS

Difford No. 1 Well in Valley Center Pool cemented with OILMAX.



Company, farm—	Location	Wells	Prod.
Independent-Darby:			
Pappen	16-7-4	1	1,000
Independent-Westland:			
Rhodd	16-7-4	1	2,645
Inter-Ocean:			
McGee	23-7-4	6	307
Irwin-Martin:			
Kelly	2-7-4	2	2,610
Magnolia:			
Banta	14-7-4	3	45
Brandenburg	18-7-5	5	1,592
Caudle	13-7-4	1	0
Cherry-A	26-7-4	5	868
Cherry-B	26-7-4	3	215
G. W. Fyke A	20-7-5	1	533
G. W. Fyke B	20-7-5	2	315
Tull Fyke B	20-7-5	2	1,248
Tull Fyke D	20-7-5	2	178
Hembree	19-7-5	4	167
Latimer	17-7-4	2	1,180
J. M. Robbins	15-7-4	4	314
Mary Wilborn	24-7-4	2	486
S. A. Wilborn	24-7-4	5	773
Charles Youts	20-7-5	5	501
C. A. Youts	19-7-5	4	446
H. E. Youts	20-7-5	7	5,577
Magnolia-Pierce:			
Hughbanks	17-7-4	1	1,674
McCullough-Black:			
Bruno	25-7-4	5	1,060
McCullough-Mid-Continent:			
Smith	25-7-4	6	700
Mid-Kansas:			
Getzleman	25-7-4	4	1,040
Lunay	30-7-5	3	385
Phillips:			
Cherry	25-7-4	2	185
Stahl	30-7-5	4	750
Prairie:			
Desmond	25-7-4	4	130
Ellison	25-7-4	4	530
Gammon	30-7-5	8	3,150
Hembree	19-7-5	4	3,057
Linn	30-7-5	4	790
Wolfe	29-7-5	4	3,525
Youts	19-7-5	4	215
Prairie et al:			
Davis	18-7-5	4	155
Prairie-Maud:			
Nesbit	18-7-5	2	55
Prairie-Shaffer:			
Rice	17-7-4	1	1,010
Pure:			
Dodson	26-7-4	2	157
Thomas	26-7-4	4	7,709
Tolen	1-7-4	1	46
Shaffer:			
Cherry	23-7-4	4	172
Tolon	30-7-5	4	465
Sinclair:			
Blandin	25-7-4	13	1,235
Brandenberg	7-7-5	3	1,060
Bruno	26-7-4	2	3,025
Gilbreath	25-7-4	2	1,015
Nadash	29-7-5	5	510
Nealy	25-7-4	5	160
Nealy-B	25-7-4	2	750
Nesbit	18-7-5	8	2,245
O'Kitchee	19-7-5	7	420
Superior:			
Jackson	36-8-4	1	0
Texas:			
Cherry	25-7-4	4	1,255
Warner-Quinlan:			
Light	18-7-4	1	70
Westheimer-Daube:			
Freid	24-7-4	5	755
Small pumpers		111	3,541
Total		368	81,517

ASHER POOL

Independent-Twin State:			
Gardner	19-6-4	1	243
Prairie-Slick:			
Laster	19-6-4	3	4,470
Simms:			
Laster	19-6-4	2	2,455
T. B. Slick:			
Bledsoe	20-6-4	1	125
Welden	20-6-4	2	545
Slick-Amerada:			
Walker	19-6-4	1	1,640
Total		10	9,478

WEST TEXAS FIELDS

(Continued from Page 65)

was dry and abandoned. White Eagle Oil Co.'s No. 1 Hughes, located 4,942 feet from north and 560 feet from east of Section 20, was dry and abandoned at 2,566 feet.

Jones County

Brewer's No. 1 Goodman location was abandoned.

Pecos County

California Co.'s No. 2 Yates, Lease No. 2, located 1,818 feet from south and 975 feet from east of Section 34, Block 194, location was abandoned. Alexander-Lyle's No. 1 Sellman, located 1,550 feet from south and 2,310 feet from west of Section 20, Block Z, topped the salt at 814 feet, topped the lime at 1,598 feet, was drilled to a total depth of 1,655 feet and had an initial production of 3,000,000 feet of gas. Gulf Production Co.'s No. 17 Smith-B, located 2,722 feet from north and 2,745 feet from west of Section 22, Block 194, topped the lime at 1,480 feet, topped the pay at 1,415 feet, was drilled to a total depth of 1,576 feet and had an initial production of 200 bbls. hourly. Gulf Production Co.'s No. 18 Smith-B, located 2,722 feet from north and 1,360 feet from west of Section 22, Block 194, topped the lime at 1,500 feet, topped the pay at 1,420 feet, drilled to a total depth of 1,597 feet and had an initial production of 350 bbls. in six hours. Mid-Kansas Oil & Gas Co.'s No. 29-A Yates, located 1,384 feet south of SW cor., Section 60, Block 1, topped the lime at 1,020 feet, topped the pay at 1,043, drilled to a total depth of 1,220 feet and had an initial production of 6,018 bbls. in 24 hours. Phillips Petroleum Corp.'s No. 2 Ramsey, located 990 feet from north and 1,980 feet from east of Section 17, Block 194, had an initial production of 60 bbls. at 1,645-1,720 feet. T. G. Shaw's No. 1 Yates, location was abandoned in Section 58, Block 1. Atlantic Oil Production Co.'s No. 1 Trees was dry and abandoned at 1,928 feet. Mid-Kansas Oil & Gas Co. and Transcontinental Oil Co.'s No. 9-A Yates topped the pay at 1,212 feet, was drilled to a total depth of 1,381 feet and had an initial production of 157 bbls. hourly. Shell Petroleum Corp.'s No. 1 University, made 150,000 feet of gas at 1,024 feet, flowed salt water at 1,735 feet and was dry and abandoned at 1,770 feet.

Sterling County

J. T. Williams' No. 4 Clark, located 318 feet from north and 2,186 feet from east of Section 8, Block A, location was abandoned.

Ward County

J. H. L. Oil Co.'s No. 1 Hayzlett, located 1,120 feet southwest and 1,440 feet southeast of Section 17, Block 5, was drilled to a total depth of 2,545 feet, made one-half bailer water hourly at 2,-545 feet, plugged back to 2,503 feet, shot with 110 quarts at 2,438-84 feet and had an initial production of 97 bbls. daily.

Winkler County

Shell-Llano's No. 6 Scarborough, located 1,650 feet south and east of Section 1, Block C-22, topped the lime at 2,580 feet, had gas show at 2,928 feet, topped the pay at 2,891 feet, had another oil and gas show at 3,034-70 feet and made 115 bbls. Skelly Oil Co.'s No. 2 Daugherty, located 330 feet west and 2,310 feet south of Section 22, Block 26, topped the lime at 2,445 feet, had gas show at 2,-615 feet, topped the pay at 2,765 feet, was drilled to a total depth of 2,765 feet and made 55 bbls. hourly. Southern Crude Oil Purchasing Co.'s No. T-88-CX-2, located 2,310 feet east and 830 feet south of Section 21, Block 26, topped the lime at 2,470 feet, topped the pay at 2,771 feet, drilled to a total depth of 2,771 feet and made 172 bbls. oil, 72 per cent water. Its No. 8 T-88-U Hendricks, located 1,-320 feet south and 1,650 feet east of Section 41, Block 26, topped the lime at 2,558 feet, topped the pay at 2,755 feet, was drilled to a total depth of 3,037 feet and had an initial production of 104 bbls. daily, 86 per cent water.

PECOS COUNTY

YATES POOL

Week ending June 25

Company, lease—	Wells	Prod.
M. H. Black:		
Fee	1	7
California Co.:		
Yates—Lease 1	18	7,335
Smith—Lease 1, Sec. 27	3	408
Smith—Lease 1, Sec. 23	7	1,607
Smith—Lease 1, Sec. 21	3	836
Smith—Lease 2	2	107
Smith—Lease 3	12	1,895
Smith	1	5
Tippett—Lease 1	1	37
Cosby Drilling Co.:		
Smith	1	258
Gulf Prod. Co.:		
All leases	37	12,765
Humble Oil & Ref. Co.:		
Smith-A	10	1,631
Smith-B	5	344
Kirby Pet. Co.:		
Tippett	2	50
Kirby Pet. and Edson:		
Tippett	1	224
Mariand Oil Co.:		
Yates-A	6	575
Yates- A (salvage)	..	5,658
Mazda and Savoy:		
Smith	3	305
McCarty Oil Co.:		
Gray	1	8
McMan Oil & Gas Co.:		
Smith-A	1	904
Smith-B	4	707
Smith-C	5	827
Tippett	2	255
Richardson	1	86
McMan and Mariand:		
Yates	17	3,261
Mid-Kansas and Transcon.:		
Yates-A	27	8,311
Yates-B	27	5,572
Yates-C	12	6,497
Yates-D	7	7,525
Yates-E	1	81
Yates-F	4	780
Yates-G	4	1,141
Yates-H	8	6,309
Smith	5	1,664
Smith	18	3,833
Grayburg Oil Co.:		
Pecos River Bed	6	436
Salvage	..	836
Pecos Valley Oil Co.:		
Fee, Sec. 22, Blk. 26	2	71
Phillips Pet. Co.:		
Monroe	1	66
Ramsey	1	223
Smith	2	659
Red Bank Oil Co.:		
Smith	5	481
Shell Pet. Corp.:		
Tippett	11	2,364
Smith	9	974
Smith-B	1	670
Smith-D	3	505
Smith-E	1	20
Simms Oil Co.:		
Smith	7	5,796
Skelly Oil Co.:		
Tippett	1	84
Total Yates Pool	307	95,493

DAILY AVERAGE PRODUCTION BY LEASES WINKLER COUNTY

Week ending June 25

Company, farm, sec., blk.—	Wells	Prod.
Amerada Pet. Corp.:		
Cowden, 3, B-12	3	720
Atlantic O. P. Co.:		
Hendricks-A, 34, B-5	8	1,315
Hendricks-B, 44, 26	5	661
Hendricks-D, 29, B-5	8	2,087
Hendricks-E, 41, B-5	6	2,088
Hendricks-G, 46, 26	7	696
Hendricks-H, 30, B-5	1	2
Atlantic and Collett:		
Hendricks-F, 40, 26	13	2,058
Bankers Prod. Co.:		
Hendricks, 30, B-5	1	21
V. T. Bolin:		
Brown Altman, 4, B-5	1	5
California Co.:		
Hendricks, 29, B-5	7	975
Cranfill & Reynolds:		
Hendricks-A, 28, B-5	2	405
Hendricks-B, 35, B-5	1	60
Hendricks-C, 33, 26	2	127
Hendricks-E, 33, 26	2	878
Cranfill and Texon:		
Hutchinga, 47, 26	1	79
Culberson Bros.:		
Hendricks, 40, B-5	1	72
Eastland Oil Co.:		
Hendricks, 35, B-5	2	399
Hendricks-B, 41, 26	1	193
Gulf Prod. Co.:		
Hendricks-A, 34, B-5	13	3,930
Hendricks-B, 45, 26	11	6,772
Hendricks-C, 40, B-5	6	1,013
Hendricks, 44, 26	2	539
Cowden, 3, B-12	3	1,635
Humble Oil & Ref. Co.:		
Hendricks-A, 34, B-5	17	5,571
Hendricks-B, 29, B-5	6	1,098
Hendricks-C, 32, 26	8	700
Hendricks-B, 47, 26	7	709
Hendricks-C, 10, B-12	10	5,417
Independent Oil & Gas:		
Hendricks-A, 34, B-5	7	1,123
Howe-B, 44, 26	3	232
McCabe, 36, B-5	2	235
Hendricks, 42, B-5	1	11
Vardeman-B, 41, B-5	7	757
Magnolia Pet. Co.:		
Hendricks, 29, B-5	8	514
Marland Oil Co.:		
Hendricks, 33, 26	4	857
Hendricks, 29, 26	2	124
Hendricks, 34, 26	2	209
May Prod. Co.:		
Hendricks, 34, 26	1	10
American Maracaibo:		
Hendricks-A, 28, B-5	1	45
Hendricks-B, 28, B-5	1	155
Mining & Engineering:		
Hendricks, B-5	1	9
Murchison and Cranfill:		
Hendricks-A, 35, B-5	3	529
Hendricks-B, 35, B-5	3	702
Hendricks-C, 35, B-5	1	12
Hendricks-H, 35, B-5	1	1,479
Hendricks-I, 34, 26	2	547
Prairie Oil & Gas Co.:		
Hendricks, 40, 26	6	1,441
Cowden, 3, B-12	6	4,045
Pure Oil Co. (Lion):		
Hendricks, 41, B-5	11	1,799
Hendricks-B, 34, B-5	13	3,543
Hendricks-C, 45, 26	14	8,603
Hendricks-D, 44, 26	1	144
Republic Prod. Co.:		
Hendricks-A, 45, 26	12	2,904
Hendricks-B, 41, B-5	5	136
Shell Pet. Corp.:		
Hendricks-A, 45, 26	6	987
Hendricks-B, 29, B-5	6	1,063
Hendricks-C, 29, B-5	8	884
Hendricks-D, 41, B-5	6	338
Hendricks-E, 40, B-5	3	642
Hendricks-F, 46, 26	8	1,984
Hendricks-G, 39, 26	1	45
Shell-The Texas Company:		
Cowden-A, 3, B-12	6	1,418
Hendricks, 46, 26	6	1,512
Hendricks-A, 29, B-5	11	2,522
Hendricks-B, 40, 26	6	763
Hendricks-C, 40, 26	6	1,936
Hendricks-D, 40, 26	6	437
Hendricks-E, 39, 26	4	339
Skelly Oil Co.:		
Hendricks, 40, 26	12	6,380
Hendricks-B, 39, 26	2	19
Hendricks-C, 39, 26	1	344
Southern Crude Oil Purch. Co.:		
T-67 Hendricks-A, 42, B-5	3	155
T-67 Hendricks-3-A, 4, B-12	5	592
T-67 Hendricks-B, 44, 26	5	581
T-67 Hendricks-3-B, 33, 26	4	506
T-67 Hendricks-C, 33, B-5	5	595
T-67 Hendricks-2-D, 28, 26	4	905
T-67 Hendricks-E, 42, B-5	4	170
T-67 Hendricks-F, 33, B-5	5	672
T-68 Hendricks-3-A, 35, B-5	3	124
T-68 Hendricks-B, 46, 26	2	274
T-88 Hendricks-A, 44, 26	6	835
T-88 Hendricks-B, 4, B-12	4	931
T-88 Hendricks-C, 28, B-5	8	1,222
T-88 Hendricks-D, 4, B-12	6	2,827
T-88 Hendricks-H, 28, B-5	6	1,155
T-88 Hendricks-I, 30, B-5	7	1,325
T-88 Hendricks-J, 30, B-5	5	986
T-88 Hendricks-K, 41, 26	7	1,864
T-88 Hendricks-L, 4, B-12	4	909
T-88 Hendricks-M, 33, 26	31	13,615
T-88 Hendricks-N, 28, 26	6	1,547
T-88 Hendricks-O, 28, 26	4	1,179
T-88 Hendricks-P, 28, 26	1	233
T-88 Hendricks-Q, 27, 26	2	932
T-88 Hendricks-R, 28, 26	3	1,172
T-88 Hendricks-S, 34, 26	4	1,263
T-88 Hendricks-T, 34, 26	7	592
T-88 Hendricks-U, 41, 26	9	1,697
T-88 Hendricks-V, 29, 26	1	78
T-88 Hendricks-W, 5, B-12	1	294
T-88 Hendricks-CX, 21, 26	2	596
T-89 Hendricks-A, 35, B-5	3	315
T-89 Hendricks-B, 35, B-5	2	502
T-89 Hendricks-C, 35, B-5	3	1,090
T-89 Hendricks-D, 35, B-5	1	186
T-89 Hendricks-E, 40, B-5	3	186
T-89 Hendricks-F, 40, B-5	2	258
T-89 Hendricks-H, 46, 26	2	255
T-89 Hendricks-I, 10, B-12	2	129
T-89 Hendricks-J, 9, B-12	8	2,845
T-90 Hutchings, 47, 26	3	242
Texon Oil & Land Co.:		
Hendricks-A, 41, B-5	6	228
Hendricks-B, 45, 26	6	1,757
Winkler O. P. Co.:		
Hendricks, 33, 26	1	68
Total Hendricks Pool	577	139,890

LECK AREA

Atlantic, Kesslar & Logan:		
Leck, 3, 74	2	496
Amerada Pet. Corp.:		
Leck, 3, 74	2	608
Empire G. & F. Co.:		
Daugherty, 3, 74	3	211
Magnolia Pet. Co.:		
Scarborough, 1, C-22	1	146
Gulf Prod. Co.:		
Scarborough, 1, C-22	1	73
Daugherty, 3, 74	1	401
Shell-Llano Oil Co.:		
Daugherty, 1, C-22	3	164
Shell-Danciger:		
Leck, 3, 74	2	177
Shell Pet. Corp.:		
Leck, 3, 74	1	off
Skelly Oil Co.:		
Leck, 3, 74	1	571
Prairie Oil & Gas Co.:		
Leck, 16, 74	1	442
Daugherty, 3, 74	1	278
Scarborough, 1, C-22	1	39
Warner-Quinlan:		
Leck, 3, 74	1	263
Total Leck Pool	21	3,869

O'BRIEN POOL

Marland Oil Co.:		
Morton, 10, B-12	2	175
Wentz Oil Corp.:		
Morton, 10, B-12	1	204
Simms Oil Co.:		
Sealy, 50, F	1	30
Richardson et al:		
Stockton, 50, F	1	95
Total O'Brien Pool	5	504
Grand total Winkler County	603	144,263

PROGRAM OUTLINED FOR TEX.-LA.-ARK. MEETING

Preliminary plans for a fall meeting of the Texas-Louisiana-Arkansas district, American Petroleum Institute, Division of Development and Production Engineering, to be held September 5 and 6 in the Galvez Hotel at Galveston, Tex., have been announced by Carl A. Young, director.

The tentative program, which is subject to revision, follows:

September 5, morning—"Standardization of Electric Power Rate Structure for Drilling and Production"; "Centrifugal Versus Reciprocating Pumps for Gathering Oil"; and "Metallurgy of Drilling Tools."

September 5, afternoon—"Weiging and Counterbalancing Wells"; "Proper Care of Sucker Rods"; and "Methods of Waste Water Disposal."

September 6, morning — "Penalty of Crooked Holes" (continued from spring meeting); and "Drilling Vertical Holes."

September 6, afternoon—General entertainment.

Mr. Young requested that comments on the preliminary program from members and the public at large be addressed to the district chairman, A. S. Field, of the Shell Petroleum Corp., Athletic Club Building, Dallas, Tex., or the chairman of the program committee, E. V. Foran, of the Saxet Oil Co., Houston, Tex. Names of the speakers will be announced with the final program.

Those planning to attend the meeting have been requested to make hotel reservations direct.

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is *their* Proving Ground

BECAUSE Bessemers go wherever the oil industry goes, no Bessemer can foretell its destiny. It may join its brothers just a few miles from home or half a world away.

Consequently every Bessemer is painstakingly fabricated to meet the most severe conditions which can be encountered in *any* of the world's oil fields; built to deliver its 99% + running time wherever its ultimate destination may be.

For more than three decades the world has been Bessemers' proving ground—demonstrating their unfailing reliability and confirming the truthfulness of the slogan "You buy the best when you buy the Bessemer."

THE COOPER-BESSEMER CORPORATION

Formerly THE C & G COOPER COMPANY, Mt. Vernon, Ohio
and THE BESSEMER ENGINE COMPANY, Grove City, Pa.

TOP

A Battery of Bessemer Type Ten Twin Compressors being installed in a South American gasoline plant.

CENTER

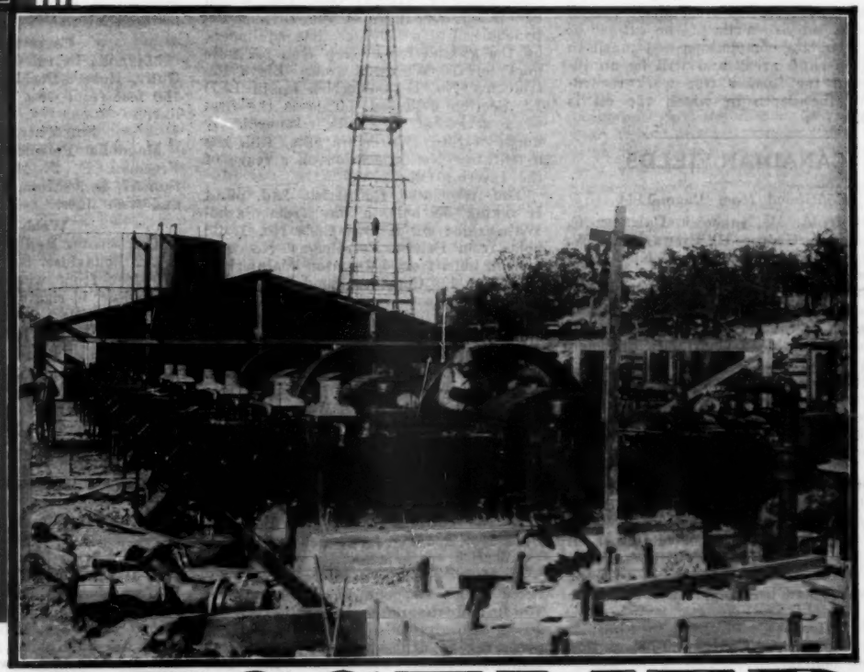
A line-up of Enclosed Case Bessemer Engines for belt drive compressor work in Venezuela.

BOTTOM

An old Bessemer on the job in Khaur, Punjab, India.

RIGHT

A typical Bessemer Type Ten installation in our own mid-continent field—where three more Bessemers are being added to those already installed.



BESSEMER

CENTRAL WEST FIELDS

(Continued from Page 76)

3,487, on the Z. L. Dearing, Section 28, is a light gas producer in the Clinton at from 2,566 to 2,579 feet; total depth 2,586 feet. Same company is drilling No. 1-3,570 on the Effie Cline, Section 23, same township. Same company brought in a very nice gas well in No. 1-3,458 on the Julia Hill, Lot 84, Lick Township, same county, in the Clinton lime from 2,390 to 2,391 feet; total depth 2,395 feet. Same company has an average gasser in No. 1-3,441 on the Lucy J. Hawks, Section 12, Coal Township, same county, in the Clinton at from 2,678 to 2,693 feet; total depth 2,703 feet.

In Vinton County, Knox Township, the Co-operative Oil Co. is drilling No. 4 on the Garfield Brooks, Section 3.

Fairfield County

In Fairfield County, Pleasants Township, the City Natural Gas Works is drilling a second test on the John Holcomb, Section 24.

In Guernsey County, the Ohio Fuel Gas Co. made a location on the Fannie D. Brown & Co. property, Section 4, Cambridge Township. In Wheeling Township, the North Salem Oil & Gas Co. is drilling on the Charles F. Gray, Section 11, and the Rallston Oil Co. is drilling on the William T. Virtue, Section 20, same township. Ohio Fuel Gas Co. is drilling a second test on the W. J. Nickle, Section 36, Spencer Township.

In Morgan County, Marion Township, the Ohio Fuel Gas Co. has an average gas well in No. 1-3,466 on the C. O. Thomas, Lot 23, at from 1,613 to 1,637 feet; total depth 1,642 feet. Same company made a location for No. 1-4,732 on the Russell James property. Woodyard Brothers and others are drilling No. 3 Harvey S. Hollowell, Section 33. In Penn Township, Choquill and others are drilling No. 5 A. M. and J. H. Crew, Section 35, and Henning Brothers are starting No. 26 on the Ada Harper, Section 2. James Moore and others made a location for No. 19 on the Clyde Foraker, Section 19, Union Township.

A test on the Saloma Weaver farm, Section 4, Hanover Township, Licking County, drilled by the Wehrle Gas Co. for gas surprised the owners by coming in at better than 100 bbls. initial and opens up what looks like a nice pool.

A test on the Charles B. Anderson, Section 4, Jackson Township, Muskingum County, is another surprise for the Central Ohio area, and is owned by the Pure Oil Co. It is credited with about 140 to 150 bbls. initial. Wells of the caliber of these two late completions add much to the deep sand areas and will be an inducement for further test work regardless of the depth in which the oil is found.

CANADIAN FIELDS

(Continued from Page 114)

L. Irving, A. M. Naismith, Calgary; C. Rice Jones, George H. Stewart, R. W. Craig, Winnipeg; and A. L. Koyl, Saskatoon.

Altacan Oil & Gas Co. has been organized at Calgary to drill on a 2,150-acre tract in the Waite Valley area. Officers are: President, Charles L. Bacheler, Great Falls, Mont.; vice president, A. C. Galbraith; secretary, R. E. Kennedy; directors, A. Nimmo, A. Lowe, Lloyd Bannerman, all of Calgary. Mogul Oils' No. 1 on the Ghost River structure is digging cellar.

In the Skiff Field, southern Alberta, Dauntless Oils' No. 1, LSD 9, Section 36-6-15w4, is reported rigged up ready to spud in. Imperial-Devenish's No. 3, Section 11-5-14w4, is reported full of oil and shut in. Lion's Gate Oil Co.'s No. 1, LSD 1, Section 33-6-15w4, is working on derrick and bringing in a rotary outfit.

Milk River Oils, Ltd. is locating its No. 1 test north of Coutts and negotiating drilling contract.

On the Red Coulee structure west of Coutts, Ko-Top Oils' No. 1, SE Section 2-1-17w4, is contracting for a test to be started within 30 days. Vanalta Oils' No. 1 is reported rigging up. Hol-Gar Petroleum Co.'s No. 1, LSD 1, Section 11-1-17w4, is working on derrick. South of Lethbridge, Lethbridge Petroleums, Ltd., is starting core drilling, preparatory to locating a commercial test.

In the Champion district, Hudson's Bay-Marland Oil Co.'s No. 1, Section 9-16-23w4, is reported drilling at 1,325 feet and carrying 15½-inch casing. Hudson's Bay-Marland's Kinnondale test is reported drilling at 930 feet.

In the Taber district, east of Chin and north of the Skiff Field, F. E. Cole and associates of Winnipeg have filed on 8,000 acres. The dome structure is thought to be related to the Barnwell structure, where gas was found some years ago. It is understood Campbell Hunter, of London, England, reported on the structure.

On the Montana side, Western Natural Gas Co.'s wildcat in the Sweetgrass Hills is reported drilling below 2,000 feet and close to potential production.

Ribstone Field

In the Ribstone Field, eastern Alberta, Meridian Oils' No. 1, LSD 1, Section 16-14-1w4, is making better than 100 bbls. on a pumping test.

In the Wainwright Field, east central Alberta, Wainwell Oils' No. 4, LSD 15, Section 36-44-7w4, is preparing to start pumping, with an estimated production of 150 bbls. a day. The well is reported practically clear of sand. Wainwell's No. 1, LSD 9, same section, got the first sand at 2,072 feet with an initial flow around 300 bbls. a day, but the well sanded up, and has since been deepened to 2,225 feet. It will be drilled in within a few days. Wainwell's No. 2, LSD 15, same section, has large gas production at 2,038 feet, and is being used to supply fuel.

Immediately north of Wainwell's No. 1, Admiral Oils' No. 1, LSD 16, same section, is rigging up. Murphy & Boggs of Ardmore, Okla., have the contract; the test will spud in early in July. West of this location, Wainwright-West's No. 1, LSD 1, Section 1-45-7w4, has derrick up. Directors include P. D. Bowlen, Col. R. I. Towers, C. B. Lindsey, Toronto; Senator W. H. Sharpe and W. A. Johnston, Winnipeg; D. M. Wright, Stratford, Ontario, and H. M. Snyder, Waterloo, Ontario.

Two miles northwest of the Wainwell group of producers, a Brandon syndicate has derrick up and machinery practically installed in LSD 1, Section 10-45-7w4. Cornering this location in LSD 12, Section 2-45-7w4, Hargal Oils, Ltd. which has taken over part of the British Petroleums, Ltd.'s holdings, has equipment on the ground for a deep test. A mile north of the Wainwell group, Lloyd Petroleums' No. 1 has derrick up in LSD 12, Section 6-45-6w4. This is the first of a series of 10 wells. Immediateiy north of this, Beth-Wain Oils, Ltd. has a tentative No. 1 location on acreage of the Interior Oil Co.

The Associated Refineries, Ltd. plant is taking 55 bbls. a day from Sasko-Wainwright Oil & Gas Co.'s No. 1, 35 bbls. from British Petroleums' No. 3-B, and 20 bbls. from Edmonton-Wainwright Oils' No. 1. Considerable drilling is to be done in close proximity to this group of producers. Wainwright Petroleums' No. 1, LSD 6, Section 30-45-6w4, has derrick up. Emerald Oils' No. 2 will probably be spudded in at the same time. J. W. Eliot Drilling Co. of Kevin, Mont., has the contract. Sasko-Wainwright Oil & Gas Co.'s No. 2 is being started close to No. 1 producer in LSD 8, Section 19-45-6w4. Daugherty Petroleums, Ltd. is preparing to start a test in the same area.

Fabyan Area

In the Fabyan area, Maple Leaf Oil Co.'s No. 2, LSD 1, Section 24-45-6w4, has derrick up for a test for gas. Northwest of Irma, eastern interests have located two tests, one in Section 12-48-10w4, and the other in Section 29-48-10w4. Toralta Oils, Ltd. of Toronto, is preparing to drill two rotary tests this summer. Zonite Petroleums, Ltd. will drill a test in Section 1-45-7w4, north of the Wainwell acreage.

Interests associated with the Canadian Exploration Co. of Denver are planning to drill for oil this season on a structure near Duvernay in the Edmonton district.

In British Columbia, a California syndicate is reported to have leased acreage in the Sage Creek district from the Amalgamated Oil Co. of Vancouver, one test to be drilled this year and a second test in the Kishenehena Creek area within 12 months. S. C. Ferdig and associates of Montana are reported arranging to start operations in August.

In Lambton County, Ontario, the Western Salt Co. is drilling a test for gas at Courtright, almost opposite the recent gas discoveries at St. Clair, Mich. In the eastern end of the Dawn Field, Union Natural Gas Co.'s No. 32, Lot 25, Concession 1, Euphemia Township, finished a dry hole at 1,700 feet. Union Natural Gas Co.'s No. 33, Lot 23, Concession 7, Dawn, south and west of the old No. 1 McDermid, is drilling around 1,800 feet without a show.

In Howard Township, Kent County, Union Natural Gas Co.'s No. 2 Ridgetown, Lot 7, Concession 11, finished dry at around 2,000 feet. In Dover Township, Kent County, Ajax Oil & Gas Co.'s No. 5 has spudded in on a location 1,300 feet west of No. 4 producer.

SOUTHWEST TEXAS

(Continued from Page 55)

pleted at 992 feet, gas well, gauging 94,560 feet of gas.

Medio Oil Co.'s No. 2 Hamilton Land & Development Co. has been spudded in.

Brooks County

Milam Drilling Co.'s No. 4 Riley Allen, formation test, spudded in.

Caldwell County

Humble Oil & Refining Co.'s No. 2 Trap Briscoe is drilling at 2,316 feet.

Humble Oil & Refining Co.'s No. 4 T. A. Tiller, J. Hinds Survey, is drilling at 2,454 feet.

Humble Oil & Refining Co.'s No. 3-A Floy Gray is location.

Humble Oil & Refining Co.'s No. 3-C Floy Gray has derrick up.

Humble Oil & Refining Co.'s No. 4-C Floy Gray is location.

Duval County

Humble Oil & Refining Co.'s No. 31 Kohler, Survey 172, located 495 feet from east line, 165 feet north line, is rigging up.

G. M. Partee's No. 4 Moody, Survey 60, located 1,248 feet from north line and 150 feet west line, is drilling at 2,000 feet.

The Texas Company's No. 1 Hyatt location is Driscoll Field is to be announced later.

Fayette County

Magnolia Petroleum Co.'s No. 1 Henry Gully, Robert Peebles league, is location 150 feet from west line, 2,000 feet south line.

San Patricio County

Magnolia Petroleum Co.'s No. 1 C. Freeman, E. J. McGloin Survey, Section 57, is location, 660 feet from south and west lines.

Webb County

Trapshooter Reilly Oil & Royalty Co.'s No. 2 Benavides, Survey 685, located 1,170 feet from west line and 150 feet north line, is rigging up.

O. W. Killam's No. 11 Bruni, Survey 3, is erecting derrick.

Zapata County

O. W. Killam's No. 1 Flores, Survey 240, located 850 feet southeast lines, 560 feet northeast lines, has spudded in.

Trapshooter Reilly Oil & Royalty Co.'s No. 4 Hinnant, Survey 74, located 150 feet south line and 750 feet east line at 1,587 feet, tested gas and is showing some oil and is running tubing.

Humble Field—Duval

Humble Oil & Refining Co.'s No. 22 Kohler, Survey 395, located 495 feet west line, 165 feet north line, drilling at 1,854-78 feet, showing gas, oil and salt water; No. 23 Kohler, Survey 404, located 1,485 feet south and west lines, drilling at 500 feet; No. 25 Kohler, Survey 172, located 165 feet north and west lines, at 1,801-04 feet is fishing; No. 26 Kohler, Survey 251, located 495 feet east line, 165 feet north line, drilling at 2,591 feet; No. 28 Kohler, Survey 171, located 165 feet north and west lines, drilling at 1,784 feet; No. 29 Kohler, Survey 395, located 165 feet south and west lines, location; No. 30 Kohler, Survey 169, 165 feet north and west lines, location. Sun Oil Co.'s No. 1 Lopez, Survey 731, located 15 feet north line, 2,000 feet east line, at 1,870-76 feet shows oil, failed to get test, drilling deeper.

Schoolfield-O'Byrne Field

Magnolia Petroleum Co.'s No. 3 Hahl, Survey 250, Block 24, 450 feet north line, 150 feet east line, drilling at 1,030 feet; No. 4 Hall, Survey 250, Block 24, 150 feet north line, 450 feet east line, location; No. B-7 Hahl, Survey 61, located 650 feet south line, 2,950 feet east line, drilling at 2,855 feet. S. & O. Oil Co.'s No. 4 Hahl, Survey 250, Block 23, located 150 feet south line, 450 feet east line, drilling at 2,100 feet. G. M. Partee's No. 2 Moody, Survey 60, located 450 feet west line, 150 feet north line, is rigging up.

Driscoll Field

Robert Driscoll's No. 16 Driscoll, Survey 448, located 2,650 feet east line, 4,000 feet north line, at 2,951-55 feet tested gas.

Randado Field—Jim Hogg

Magnolia Petroleum Co.'s No. 42 M. S. Bank, Survey 235, located 330 feet west line, 4,254 feet north line, drilling at 2,722 feet. Randado Oil Corp.'s No. 35 Palacious, Survey 291, Block 2, located 150 feet south line, 450 feet east line, standing at 100 feet. T. J. Conway's No. 2 Leyendecker, Survey 234, Block 4, located 50 feet west line, 450 feet north line, drilling at 435 feet.

Henne-Winch Fariss Field

George S. Marshall's No. 4 Holbein, Survey 11, Block 10, Share 3, located 150 feet south and west lines, has derrick up; No. 5 Holbein, Survey 15, Block 10, Share 3, location.

Schott Field—Webb

Livingston & Payne's No. 1 Guerra-Ochoa, Survey 58, located 917 feet east line, 470 feet south line, at 1,647-49 feet tested oil, preparing to set casing.

Mid-Ojuelos Field

Crown Central Petroleum Corp.'s No. 1 E. Garcia, Survey 463, located 900 feet east line, 150 feet south line, at 1,570-74 feet set 6⅝-inch casing.

Carolina-Texas Field

George S. Marshall's No. 1 Webster, S half NW, Survey 684, located 150 feet north and east lines, at 2,127-32 feet tested dry, drilling deeper. Carolina-Texas Oil & Gas Co.'s No. 7 Benavides, SE NE, Survey 683, located 1,000 feet east line, 153 feet south line, at 2,079-85 feet tested dry, drilling deeper.

Magnolia-Cole Field

Cole Petroleum Co.'s No. 67 Benavides, Survey 412, Block 12, located 313 feet east line, 160 feet north line, is standing at 38 feet. Magnolia Petroleum Co.'s No. 1 J. G. Valdez, Survey 754, Block 15, located 150 feet south and west lines, is derrick; No. 1 A. Benavides, N half, Survey 660, 660 feet south and east lines, location; No. 1 M. Benavides, N half NW Section 660, located 660 feet south and east lines, is rigging up; No. 1 C. Benavides, Survey 662, 660 feet north and east lines, is location; No. 1 R. Lopez, Survey 455, location 660 feet north and west lines.

Cole Gas Field

Shepard and others' No. 1 King-Harper, Survey 323, location 337 feet north line, 1,560 feet east line. Trussell-Cezeaux-Putman's No. 3 Bruni, Survey 10, Block 30, located 300 feet northwest lines, 150 feet northeast lines, drilling at 2,000 feet.

Jennings Field—Zapata

South Texas Production Co.'s No. 1 Roy Jennings, Mira Flores Grant Survey, located 18,055 feet southwest lines, 11,040 feet southeast lines, at 1,580 feet tested 1,300 feet sulphur water, drilling deeper. H. Muckelroy, Jr., No. 2 Trevino, Survey 66, Block 3, location 150 feet northeast corner. O. W. Killam's No. 14 Cuellar, Cerrito Blanco Grant Survey, location 160-acre tract out of 1,776 acres, Cuellar tract.

Somerset Field—Atascosa

Schimmel Production Co.'s No. 3 H.

F. Gayle, C.E.P.I.&M., Block 2, location 946 feet east of No. 1.

Pettus Field—Bee

Mission Drilling Co.'s No. 1 Ray at 2,300 feet cutting out liner; No. 3 Ray Ranch, 3 miles east of No. 2, is spudded in. Nichols and others' No. 2 Hicks, located near gravel pit west of highway, central part of county, drilling at 2,100 feet.

Dobrowolski Field—Bexar

Amelia Balzart's No. 3 J. P. Adams, 150 feet from road, offsetting No. 1 Dobrowolski, has derrick up. W. W. Richardson's No. 1 G. Schmetz estate, P. L. Buquor Survey, located 131 feet north line, 150 feet west line, drilling at 210 feet.

Somerset Field

American Oil & Gas Co.'s No. 4 McConnell, W. G. Baker No. 138 Survey, located 806.6 feet east line, 685.5 feet south line, rigged up and standing.

Joe Bruner Field—Caldwell

Tip de Arman's No. 3 G. F. Carter, Hinds Survey, location 50 feet north and west lines. E. R. Brawn & C. O. Miller's No. 2 R. W. Carter, Gerren Hinds Survey, located 300 feet north of No. 1, 150 feet north and west line, is derrick. Cranfill & Reynolds' No. 3 Hanson, James Hinds Survey, at 2,735 feet is in Edwards; No. A-2 J. L. Northcut, S. Shupe Survey, location 300 feet southwest of No. 1. Forest Oil Co.'s No. 1 M. H. Woods, Isaac Weldon Survey, Block 35, location south central part of lease; No. 1 T. Enriquez, Luling Townsite Survey, Block 32, location center of lot 30. Gulf Production Co.'s No. 5 J. L. Northcut at 2,670 feet waiting on pump; No. 7, James Hinds Survey, at 2,365 feet in chalk. T. C. Hadley's No. 1 J. M. Hanson, James Hinds Survey, 150 feet south and east lines, is shut down at 2,640 feet; No. 3 Merriwether, A. Floyd Survey, at 2,749 feet in Georgetown, no chalk; No. 4 Merriwether is derrick. Humble Oil & Refining Co.'s No. 3 C. F. Dye, James Hinds Survey, located 150 feet north and east lines, drilling in shale at 706 feet; No. 4 C. F. Dye, located 526 feet north line, 150 feet west line, is derrick; No. 5 T. A. Tiller, located 750 feet east line, 150 feet south line, is derrick; No. B-2 M. Briscoe, located 206 feet north line, 150 feet west line of "B" lease, at 2,677 feet in Georgetown set 6⅝-inch casing; No. A-4 M. Briscoe, located 206 feet north line, 150 feet east line, swabbing at 2,701 feet; No. B-2 Floy Gray, James Hinds Survey, located 150 feet south and east lines, drilling at 1,700 feet; No. B-3 Floy Gray, located 450 feet north line, 150 feet east line Floy Gray "B" lease, is derrick; No. D-1 Floy Gray (46 acres), James Hinds Survey, located 664 feet north line, 150 feet east line, drilling at 1,365 feet; No. 5 L. G. Hanson, James Hinds Survey, located 701 feet east line, 150 feet south line, drilling at 2,258 feet; No. 6 L. G. Hanson, located 100 feet east line, 150 feet south line, drilling at 2,315 feet; No. 4 Addie Hinds, located 526 feet north line, 150 feet west line, at 2,180 feet is in chalk; No. 5 Addie Hinds, located 826 feet north line, 150 feet west line, drilling in shale at 515 feet; No. B-3 Johnson, James Hinds Survey, located 206 feet south line, 150 feet east lines, at 2,665 feet set 6⅝-inch casing, topped Georgetown 2,610 feet; No. B-8 Moses & Baggett, S. Schupe Survey, at 2,259 feet in Taylor; No. B-9 Moses & Baggett at 2,365 feet, in chalk, standing; No. A-2 J. A. Northcut, James Hinds Survey, located 450 feet south line, 150 feet east line, drilling at 2,475 feet, topped chalk 2,440 feet; No. A-3 J. L. Northcut at 2,385 feet in chalk; No. A-4 J. L. Northcut set 6⅝-inch casing at 2,670 feet, topped serpentine 2,616 feet; No. B-1 J. L. Northcut at 2,297 feet in chalk, topped at 2,225 feet; No. A-2 C. Smith, James Hinds Survey, located 150 feet north and west lines, at 2,458 feet, topped chalk 2,310 feet; No. A-3 Clyant Smith, James Hinds Survey, located 512 feet north line, 150 feet west line, drilling at 1,618 feet; No. B-2 Clyant Smith at 1,744 feet in shale; No. B-4 C. Smith, James Hinds Survey, located 150 feet north and east lines, drilling at 1,308 feet; No. B-5 Clyant Smith, James Hinds Survey, located 512 feet north and 150 feet east lines, drilling at 1,716 feet. Luling Oil & Gas Co.'s No. 1 G. R. Carter, Gerren Hinds Survey, located 150 feet out of northeast corner, at 2,704 feet is rigging up to deepen; Shell Petroleum Corp.'s No. 1 Clyant Smith, drilling at 2,669 feet, topped Edwards at 2,669 feet. The Texas Company's No. 8 Merriwether at 2,786 feet is standing, shot casing.

Agua-Duce Field—Nueces

Agua Dulce Oil & Gas Co.'s No. 1 Otto Wolter, Section 34, Benton's pasture, standing at 2,047 feet. R. & G. Corp.'s No. 1 Brown, George H. Paul Subdivision, SE NW Section 87, is location; No. 2 Ed Allen, located 150 feet north and east lines, at 1,986 feet set casing to drill in. Spencer & Rhodes' No. 1 The Texas Company fee, located 150 feet north and west lines of Tract No. 6, Roos Subdivision, has spudded in.

Dale Field

The Texas Company's No. 2 J. Moore, J. Gilbert Survey, located 600 feet northwest lines, 1,600 feet southwest lines, at 1,400 feet in shale.

Kingsville Field—Kleberg

Humble Oil & Refining Co.'s No. 4 Flato, Block 10, Section 40, located 250 feet east line, 450 feet north line, drilling at 6,050 feet.

CALIFORNIA FIELDS

(Continued from Page 62)

of the productive acreage, have engaged in only limited development as they are desirous of restricting production until conditions improve. The Barnsdall started off the past week by bringing in No. 3-A O'Dea flowing 1,530 bbls. of 38.1 gravity oil and 1,600,000 feet of natural gas daily from 5,245 feet and the Union climaxed development work by subsequently completing No. 11 Rosecrans flowing 1,175 bbls. a day from 5,615 feet. Production of the latter well failed to clean up several days after completion and it will be recemented. Both the Barnsdall and Union have another potential producer nearing completion and are expected to augment present production in the near future. The Sunset Pacific Oil Co. is rigging up rotary equipment in No. 31 Marine and it will be redrilled and deepened to the lower horizon. This well was originally finished doing 1,142 bbls. daily from 4,920 feet, at which depth drilling will be resumed.

Lawndale

The Lawndale Field, which a few months ago was a beehive of activity, has proved a dismal failure and the failure to develop production in the town lot area resulted in a wholesale suspension of activities a month or two ago. There are only seven strings of tools in operation at present compared with 59 at the peak development. Intensive drilling in the town lot area adjoining the Lawndale Field has resulted in a loss of at least $5,000,000 due to the drilling of numerous dry holes. Eleven holes were abandoned as dusters last month and many more are slated for a similar fate. Daily production of the Lawndale Field approximates 1,555 bbls. This represents the output of the San Clemente Oil Co.'s No. 2 Peck, flowing 755 bbls. daily, No. 2 Howland of the Pacific Western Oil Co. flowing 350 bbls. daily, No. 2 Brown of the Petroleum Securities, pumping 75 bbls. daily and the Smith Development Co.'s No. 8 Peck flowing 375 bbls. per day.

Elwood

The Barnsdall and Rio Grande finished another good well in the Elwood Field of Santa Barbara County during the past week when No. 7 Bell Luton was brought in flowing 4,075 bbls. of clean 37.1 gravity oil daily from 3,547 feet. This new well, which has a penetration in the oil sand of 310 feet, is the eleventh successful completion chalked up by the Barnsdall and Rio Grande since discovery of the Elwood Field and raises the current production to approximately 29,000 bbls. per day. No. 5 Doty should be the next well completed by the Barnsdall as it is within 100 feet of completion. Tideland development offsetting holdings of the Barnsdall and Rio Grande at Elwood has already taken definite form. The Pacific Western Oil Co. and the Barnsdall have already started construction of the necessary wharves out in the ocean beyond mean high tide and the Union Oil Co. and Bankline are expected to get under way shortly as each has staked location and submitted plans for approval of the War Department.

Drilling operations in the Ventura Avenue Field resulted in the completion of one new well, the Shell Oil Co.'s No. 31 Gosnell, which registered an initial of 720 bbls. daily from 7,487 feet, the water string, an 8⅝-inch, having been landed at 6,127 feet. Daily production has shown a substantial increase during the past several weeks and it is probable present development will result in the maintenance of present production. The output of this field could be pushed well above 100,000 bbls. per day with additional drilling if occasion demanded but this will not be done as the Associated and Shell, which control the major amount of productive acreage, are holding back production. The Associated and Shell each increased development work and it appears probable additional wells will be spudded in shortly as both companies are rigging up rotary equipment.

Midway-Sunset

The Midway-Sunset Field of Kern County sprang into the limelight again due to developments of considerable importance out in the Maricopa flats where drilling operations were greatly stimulated a short time ago when the Signal Oil & Gas Co.'s No. 2 Sheehan blew in flowing better than 1,000 bbls. per day from a relatively shallow depth. The Doyle Petroleum Co.'s No. 1 Weir focused the attention of operators on this recent extension by staging a premature blowout from 3,398 feet. This new well, near the C Section 8-11-23, blew in flowing at the rate of approximately 1,000 bbls. per day with the drill pipe still in the hole. The crew subsequently succeeded in bringing it under control and a string of 11-inch is expected to be landed within a few days. Twenty feet of oil sand had been cored previous to the blowout staged by No. 1 Weir and a test of the oil produced approximated 23.5 degrees A.P.I.

The North American's No. 1 Sunset Extension, also located in Section 8-11-23, threw considerable light on the potentiality of the Sheehan zone just previous to the blowout of the Doyle Petroleum Co.'s project as it blew out for the second time and partially demolished the derrick. The well was also brought under control and the crew is repairing the rig and making preparations to drill ahead. The Signal Oil & Gas Co. removed any doubt which may have existed regarding the productivity of this area when No. 3 Sheehan blew in flowing 1,070 bbls. of 22.6 gravity oil daily from 3,240 feet, the hole having been finished with a string of 8⅝-inch landed at 3,096 feet. Several other wells should be completed out in the Maricopa flats within 30 days and if they come up to expectations this immediate area should be doing in excess of 5,000 bbls. per day. In addition to No. 1 Weir of the Doyle Petroleum and No. 1 Sunset Extension of the North American, No. 1 Bronco and No. 1 Lincoln of the latter company, No. 1 Sunset of the Midway Northern Oil Co., No. 1 Havenstrite of the California Western Oil Co. and No. 4 Sheehan of the Signal Oil & Gas Co. should also be listed for early completion.

Santa Barbara

Although drilling operations in the recently discovered Santa Barbara Field have been adversely affected due to the drilling of a dry hole by the Ring Petroleum and a break in the water mains serving this area, the next two weeks should witness the completion of at least one new well and possibly more. The duster drilled by the Ring Petroleum will naturally prevent the spudding in of several projected holes farther out on the structure but the unfavorable outcome does not affect the Santa Barbara Field one way or the other except that it defines the production in this immediate locality. No. 1 Nugent of the Ring Petroleum is approximately 750 feet south of the discovery well and while this distance would be relatively insignificant on a major structure it is of vital importance at Santa Barbara because the productive limits in this field will be rather narrow. The difficulty experienced in getting water at Santa Barbara was only of a temporary nature and has already been rectified with the result that drilling operations have already been resumed on practically all of the wells which were suspended because of this trouble.

Dunlap & Knapp picked up the oil sand in No. 1 H. & L. several days ago and this well may be tanking oil before another week. The Exeter Oil Co. has also encountered the pay, having already cored more than 30 feet of oil sand in No. 1 Edwards located about 600 feet east of the Olympic's discovery, No. 1 Lomas. The Exeter's new well, which is also showing plenty of gas, will probably be in a position to make a bid for production late next week unless something unforeseen develops. No. 1 fee of the Union Oil Co., J. O. Seeple's No. 1 H. & K., and the General Petroleum's No. 1 Mesa School should also be listed for early completion. The dry hole drilled by the Ring Petroleum has eliminated considerable projected drilling south of the discovery and a movement is under way to carry this duster down for a conclusive test. Operators are being asked to contribute a little dry hole money on the assumption that any subsequent discovery would prove mutually advantageous. It is probable something definite along this line will be undertaken as the pool would not necessarily have to be large.

Mount Poso

The Mount Poso Field of Kern County is expected to show greatly increased production later this year as the Union Oil Co. and Shell are making preparations to open up the curtailed production on their respective properties. There is only one pipe line out of this field but the Union is scheduled to start actual construction work on a new 8-inch some time within a few weeks. This projected line will give the Union and Shell an outlet for their production which has been shut in because of the absence of pipe line facilities. The first and only pipe line laid out of the Mount Poso Field up to the present was constructed by the General Petroleum Co. and extends from this concern's Glide lease in Section 21-27-28, to its holdings in Kern River Field, approximately 15 miles. Lease obligations forced the General Petroleum to start running oil on May 1, 1929, and this factor has also made it obligatory for the Union and Shell to start active production soon. The Petroleum Securities finished No. 15 Glide, a new well in this field, and No. 16 on the same lease has already been spudded in. No. 15, the company's recent completion, was brought in doing 210 bbls. daily from 1,870 feet but was shut in a short time after completion due to the inability to move production. The Texas Company's No. 2 Vedder in Section 4-27-28, followed No. 15 Glide into production and this new well is pumping 345 bbls. of 15.4 gravity oil daily from 1,697 feet. A new producer was also added out on the west front section of the Kern River Field this week when the Chanslor-Canfield Midway Oil Co. successfully finished No. 25 in Section 23-28-27, doing 145 bbls. per day from 2,208 feet.

LOUISIANA-ARKANSAS

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000 feet, total depth 2,229 feet. Natural Gas Producing Co.'s No. 1 Sandidge, Section 10-20-4, gauged 25,876,000 feet, total depth 2,201 feet. This was the result of deepening the hole 25 feet. When completed at 2,176 feet in May, 1922, the well made 26,000,000 feet. Mack & Pipes' No. 1 Cagle, Section 7-18-5, Ouachita Parish, gauged 1,908,000 feet at 650 pounds, total depth 2,222 feet and United

Oil & Natural Gas Products Co.'s No. 4 Guthrie, Section 49-20-4, gauged 23,007.000 feet at 700 pounds, total depth 2,147 feet.

International Gas Products Co.'s No. 1 Kate Humble in Section 35-16-6, made only 300,000 feet, total depth 2,488 feet. It is an edge well, or a semiwildcat in the far southeast corner of the field and in a sense is a small extension for while there is production northeast and southwest there is only one well between it and the center of the field, and it is 1½ miles away. Average depth of Richland wells is around 2,450 feet. Palmer Corp.'s No. 1 in Section 12-20-3, Union Parish, gauged 6,264,000 feet, total depth 2,169 feet.

The Bethany district of Panola County, Texas, had three completions, one a junked hole. Adams & Waller's No. 5 Adams, James Matthews Survey, made 8,000,000 feet of gas with a spray of oil and salt water from 2,726 feet; Natural Gas Products Co.'s No. 7 Floyd, B. C. Jordan Survey, gauged 2,808,000 feet, total depth 966 feet and Magnolia Petroleum Co.'s No. 3 Lula Fletcher, also in the Jordan Survey, was abandoned at 2,999 feet when all attempts to get a stuck drill stem out of the hole failed.

Daily Average Production

Daily average runs from the field in this division fell off 850 bbls., most of the decline being from the Louisiana end. Caddo light oil runs fell off 670 bbls. but small gains in 7 of the other 10 districts pared it down in the net results. Runs from the division totaled 104,955 bbls. of which Arkansas produced 69,560 bbls., a decline of 265 bbls. and Louisiana 35,395 bbls. Smackover heavy runs were off 160 bbls. Runs from the several districts were:

Louisiana

Caddo, light	8,425
Caddo, heavy	3,410
Homer	3,910
Haynesville	5,230
DeSoto-Red River	3,850
Elm Grove	610
Bellevue	600
Cotton Valley	2,740
Urania	5,880
Pleasant Hill	480
Sarepta-Cartersville	260
Total	35,395

Arkansas

El Dorado	4,570
Smackover, light	6,090
Smackover, heavy	48,400
Stephens	1,020
Nevada County	940
Lisbon	1,240
Champagnolle	7,200
Bradley	100
Total	69,560
Both states	104,955
Last week	105,805
Decrease	850

MICHIGAN FIELDS

(Continued from Page 61)

western Michigan, including Cass, Berrien, Allegan and Van Buren Counties, is one section where a number of wildcats are drilling. Clare and Gladwin Counties north of the Mount Pleasant Field in Isabella and Midland Counties and the territory intervening also are getting a play. Lake County, which adjoins Mason County with its two gas wells in the Niagara formation and two oil producers in the Traverse, has three wildcats started while a new deep test is being started in Manistee County and core tests are being made through Manistee and Osceola Counties by the Pure Oil Co. Wells are still drilling in Montcalm, Mecosta and Gratiot Counties.

The Grayling Development Co. has completed five tests in Kalkaska and Roscommon Counties in the central part of the northern extremity of the lower peninsula part of Michigan and is now drilling a fifth.

Blair and Miller had a smell of oil in the upper Traverse in their No. 1 F. Knowlton, SW SW, Section 2-8s-16w, Milton Township, Cass County, on the Indiana-Michigan line. The Traverse was topped at 682 feet and the well is now drilling at 818 feet. It is near Niles, Mich.

Drive pipe has been landed and C. A. Daniels' No. 1 Charles Clute well, NW NE Section 2-7s-13w, Porter Township, Cass County, near Three Rivers, is drilling.

Two wells in Berrien and Van Buren Counties, respectively, near Watervliet, are having trouble with quicksand delaying landing of the drive pipe. They are the Blatchford Oil and Gas Co.'s No. 1 Blatchford, NW SW Section 11-3s-17w, Watervliet Township, Berrien County; and the Bi-County Fuel and Gas Co.'s No. 1 Emanuel Home, SE NE Section 34-2s-17w, Covert Township, Van Buren County.

In the Muskegon Field 9 new producers were completed with an aggregate initial production of 2,475 bbls. The five largest wells were completed in the Dundee from which practically all of the potential production of the field now estimated at 75,000 bbls. is coming. Three upper Traverse wells and one lower Traverse pumper comprised the 9 successful completions.

Five of the new wells are located in Muskegon Township and four in Laketon Township.

The two largest Dundee wells were No. 7 and No. 13 John Thompson wells of the Johnson Oil Refining Co., making 600 and 520 bbls. initial. Two Muskegon Township Dundee wells were about the same size, 500 bbls. initial, Swastika Oil & Gas Co., No. 4 Charles I. Giles, SE SE Section 6-10-16, and Ottawa Petroleum Co. and Crude Oil Co. of Michigan No. 2 Torrent estate.

Dixie Oil Co.'s No. 3-D J. D. Ross, NE SW Section 12-10-17, Laketon Township, made more than 200 bbls. initial. It is near the north shores of Bear Lake.

New Locations

Six new locations, three in Muskegon Township and three in Laketon Township, were made. They are: Muskegon Oil Corp.'s Nos. 5 and 6 Daniloff, SW SW Section 5-10-16; Gerald J. Wagner and others' No. 1 James Dow, NW SE Section 5-10-16; Ohio Oil Co.'s No. 3 Alfredia B. Gates, NE NE Section 11-10-17; Fleeger-Ohlson Association's No. 1 Henry Dykstra, NW SE Section 12-10-17, and Dixie Oil Co.'s No. 1 Nellie King, SW NW Section 11-10-17.

Kimmell and Shrack's No. 1 F. L. Hamilton, NE SW Section 5-1n-14w, Chester Township, Allegany County, had landed 8-inch casing at about 550 feet.

Lake County

Fred J. Estes' "Big Six" well on the Kellogg, NW NW, Section 11-20n-11w, Dover Township, Lake County, is still shut down at 757 feet but will resume this week.

P. E. Millis is driving pipe on Brindel Brothers' No. 1 Jess Cummings, SE NW, Section 32-18-14, Sweetwater Township, Lake County, a new location. Patterson and Day's No. 1 C. C. Davis, NE SW, Section 19-18n-12w, Cherry Valley Township, Lake County, is driving pipe at about 200 feet.

A rig is being moved in for the Fisher-Robbins Oil & Gas Co.'s No. 1 Chamberlain estate, NE SW, Section 14-24n-16w, Arcadia Township, Manistee County, also a new location.

The Grayling Development Co.'s new test, in which the Muskegon Oil Corp. is interested, is located on the A. Saunders property, SW NW, Section 2-26n-7w, Kalkaska County. It is their fifth test.

Benedum-Trees Oil Co.'s No. 1 Frank Truman, SW SW, Section 26-14n-8w, Morton Township, Mecosta County, is now one of the deepest wells in Michigan at 4,670 feet. The Big Rapids Oil & Gas Co.'s No. 1 H. Anderson, NE NE, Section 14-15-9, Colfax Township, also Mecosta County, struck the Marshall at 1,340 feet and is drilling.

Two wells in Montcalm County are shut down while the third Montcalm wildcat is straightening a crooked hole at 2,090 feet. The two shutdown tests are the Ionia-Montcalm Development Co.'s No. 1 A. A. Herrick, NW NW, Section 26-9-16, Bushnell Township, and the Hilltop Oil & Gas Co.'s No. 1 J. Nobles, SW SE, Section 27-12-5, Richland Township. Hale, Hickey and Snyder's No. 1 Snyder in Section 20, Cato Township, had 2,800 feet of hole before it was necessary to go back to straighten the hole.

Clare County

Two wells are being started in Clare County and one in the adjoining county of Montmorency north of the Mount Pleasant Field where prospects are now considered very good. Rigs are moving in for the Decem Development Co.'s No. 1 Frank S. Salters, NE NE, Section 33-18n-6w, Fremont Township, and for James A. McKay's No. 1 fee, NE NW, Section 7-17n-4w, Grant Township. Both wells are within 10 miles of Clare.

A new location also was made by Scott Stammler for No. 1 Wilder, SE SE, Section 22-31n-4e, Hillman Township, Montmorency County.

Drilling of one of the latest wildcats in Manistee County will be started by the Fisher-Robbins Oil & Gas Co. near the village of Arcadia, NE SW Section 14-10n-16w, Arcadia Township.

One Newaygo County wildcat well was dry in the upper Traverse formation while another was shut down at the casing point waiting to drill in. Two other wells were nearing the upper Traverse and Dundee formations, respectively, and three were just getting under way.

The Oceana Oil Corp., the only drilling well in Michigan on which a rotary rig is being used so far as is known, has reached a depth of more than 300 feet in its No. 1 Samuel Stitt, SE SE Section 28-15-14, Beaver Township.

Royal R. Miller's wildcat well near Agnew, Grand Haven Township, Ottawa County, was to be shot for a show of oil encountered in what is believed to be either the Clinton or Trenton sands. The well is located on the Paul Sako lease, NE NW, Section 27-7-16, Grand Haven Township. The hole was 3,860 feet deep after passing through an oil sand 5 feet in thickness.

J. B. Reed, contractor and operator in the Muskegon oil field, has completed the first of a program of several test wells to be drilled directly north of Grand Rapids in Kent County.

The first well was located on the A. M. Cordes lease, SE SW, Section 1-7-12, Walker Township, and was drilled to about 700 feet.

Muskegon Wildcats

One Muskegon County wildcat was shot in the Berea pay sands at 1,295 feet this week and is being tested for production at that depth and the only other active wildcat in the county is drilling at about 1,400 feet.

The White River Oil Corp.'s No. 1 Daniel McDonald, NE NW, Section 29-12-17, Montague Township, is testing the Berea and making about 1 bbl. a day.

The Wright Oil Co. is drilling an interesting wildcat about a mile north of Fruitport village on the W. B. Farr property, NW NE, Section 26-9-16, Fruitport Township. Leases held by the company in the vicinity of the well are interspersed and surrounded by leases taken recently by the Dixie Oil Co., the Pure Oil Co. and other large operators in Michigan.

KANSAS FIELDS

(Continued from Page 52)

leases the Shell Petroleum Corp. controls with the exception of the 80 acres this test is on.

A new location has been made in the east edge of Wichita. It will be drilled by C. B. Davis, in the NE cor., Section 14-27-1e, Sedgwick County. It is only a short distance from the Wichita Country Golf course, and is between two other tests that had a good showing of oil. If this test finds oil in commercial quantities the golf course will be tested for oil, as the country club directors recently considered drilling, but decided to await the results of C. B. Davis' well.

Sedgwick County Production

The production by companies and leases in the Sedgwick County area for June 29 is shown by the following:

Company, lease—	S.T.R.	Wells	Bbls.
Aladdin:			
Bennington	6-26-1	2	790
Allison et al:			
Kelly	6-26-1	1	40
Barnsdall:			
Samuel	24-25-1	1	Off
Bu-Vi-Bar et al:			
Branch	6-26-1	2	321
Bright "A"	6-26-1	2	219
Bright "B"	6-26-1	4	1,327
Byers	7-26-1	1	159
Emrich	6-26-1	2	589
T. Goodrich	6-26-1	5	321
Lantz	12-26-1w	1	276
Corr	1-26-1w	5	4,535
Lyons	7-26-1e	3	2,448
Roll	7-26-1e	1	548
Rothfuss	6-26-1e	1	Off
Shawver	7-26-1e	6	4,737
Wright	12-26-1w	4	4,847
Woodard	7-26-1e	1	63
Connell:			
Cross	27-25-1w	1	10
Davis-Skelly:			
Wilson	1-26-1w	3	2,865
Derby:			
Bowling	6-26-1e	1	120
Gorman	6-26-1e	4	1,500
Dickey et al:			
Robbins	21-28-1e	1	372
Gypsy:			
Hammant	14-26-2e	3	443
Marland:			
Goodrich	16-25-1e	2	640
No. 1 Black	16-25-1	1	177
Mary Jane:			
Fitch	6-26-1e	2	803
Montour:			
Lavender	6-26-1e	2	1,179
Patton & Wentz:			
Swenson	6-26-1	1	125
Phillips:			
Difford	1-26-1w	3	160
Piefer	6-26-1e	1	110
Plains Oil:			
No. 1 Plains	15-26-2	1	608
Prairie:			
Cross	27-25-1w	1	30
Swyser	36-25-1w	3	375
Pyle & Sutter:			
Caldwell	6-26-1e	2	460
Reynolds & Hays:			
Roll	7-26-1	1	335
Robertson et al:			
Creson	6-26-1	1	950
Shell:			
Fisher	15-26-2	1	100
Lygrisse	15-26-2	1	350
No. 1 Community	15-26-2	1	199
Stearns & Streeter:			
Roll	7-26-1	1	514
Tidal:			
Scherger	6-26-1	3	155
Vickers:			
Nessen	6-26-1	3	375
White Eagle:			
Baylor	6-26-1	1	28
Robbins	20-28-1	1	135
Total		91	34,733

Butler County

Empire Oil & Refining Co. made location for No. 1 De Fore, NE cor. NW, Section 36-29-4. Richmond Drilling Co. is building the rig for No. 3 Brissey, NW cor. SE, Section 8-27-6. Southbrook Oil Co.'s No. 1 Joseph, SE cor. NW SE, Section 25-24-3, is drilling at 325 feet.

H. B. Garden's No. 1 Morgan, SE cor. SW, Section 13-27-5, is dry and abandoned at 3,190 feet.

Cowley County

A. M. Landon has the rig up for No. 1 Daniels, NE cor. SE, Section 6-30-5. Wakefield and others made location for No. 1 Daniels, SE cor. SW SE, Section 7-30-5. The Prairie Oil & Gas Co. has the rig up for No. 1 De Mott, SW cor. SW NE, Section 14-34-4. Location has been made for No. 1 Roberts, SE cor. NE SE, Section 7-33-3.

The Prairie Oil & Gas Co.'s No. 5 Youle, CWL NW NW, Section 15-32-4, made 914 bbls. in sand at 3,256-60 feet.

Edwards County

British American Oil & Gas Co.'s No. 1 McCarthy, NE cor. NW, Section 31-25-17w, was completed for 40 bbls. in sand at 4,525-71 feet.

Ellis County

Phillips Petroleum Co.'s No. 1 Schmeisler, NW cor. Section 20-12-17w, made 50 bbls. in sand at 3,429-39 feet.

Chautauqua County

The Prairie Oil & Gas Co. made location for No. 1 White, NE cor. SW, Section 15-34-8.

Harper County

Tom Slick Oil Co. and others' No. 1 Thompson, NW cor. Section 19-32-6w, is a rig under construction.

Marion County

Davis and others made location for No. 3 Rample, SE cor. SW NW, Section 7-19-3.

Morton County

White & Chaney and others made location for No. 1 Johnson, NE cor. Section 34-34-43w.

Greenwood County

Bitler & Hays made location for No. 1 Hammond, SW cor. NE, Section 3-25-10. The Texas Company staked location for No. 7-C Edwards, SE cor. SW SE, Section 21-23-11. Phillips Petroleum Co. moved the rig in for No. 1 Beal, NE cor. NW NE, Section 28-23-11. Location has been made for No. 5 Pixlee, SW cor. SE NW, Section 10-22-10. Empire Oil & Refining Co. has the rig on the ground for No. 1 Nicoll, NW cor. NE, Section 28-22-10. No. 2 Holderman, NE cor. SE SW, Section 15-22-12, is a rig on the

ground. The Prairie Oil & Gas Co.'s No. 1 Prather, NE cor. SW SE, Section 15-25-11, is dry and abandoned at 1,849 feet.

Russell County

Keys Petroleum Co.'s No. 11 Mermas, NE cor. SW NE, Section 32-13-15w, has been abandoned at 1,900 feet.

Rooks County

The Prairie Oil & Gas Co.'s No. 1 Sandberg, C SW, Section 20-9-18, has been abandoned at 3,810 feet.

Rush County

Wilcox Oil & Gas Co.'s No. 1 Schwartzkoff, NE cor. NW SW, Section 27-17-17w, is dry and abandoned at 3,730 feet.

Saline County

Templeman Brothers moved the rig in for No. 1 Laubengayer, C SW, Section 20-15-5w. Roy Austin and others built the rig for No. 1 Olsen, SW cor. SE, Section 10-15-4w.

Sedgwick County

Marland Production Co. made location for No. 1 Semsroth, NW cor. Section 25-28-4w. Bu Vi Bar Petroleum Corp. and others' rig is being built for No. 7 Corr, NE cor. SW, Section 1-26-1w, Valley Center area. The rig is up for No. 3 Lantz, NW cor. SE SE, Section 12-26-1w. Boyle & Woods' No. 1 Sandusky, NW cor. NE SE, Section 34-26-1w, is a rig.

Bu Vi Bar Petroleum Corp. and others' No. 3 Wright, SW cor. NE SE, Section 12-26-1w, Valley Center Pool, made 1,608 bbls. in sand at 3,356-63 feet. No. 4 Bright "B," SE cor. SW SW, Section 6-26-1, was completed for 484 bbls. in sand at 3,365-75 feet. Robertson and others' No. 1 Creasson, SW cor. Section 6-26-1, made 700 bbls. in sand at 3,373-75 feet. Bu Vi Bar Petroleum Corp. and others' No. 3 Shawver, NE cor. SE NW, Section 7-26-1, has been completed for 698 bbls. in sand at 3,370-79 feet. Richards & Haun's No. 1 Valley Center, SW cor. NW NE SE, Section 36-25-1w, is dry and abandoned at 3,434 feet.

Sumner County

Shell Petroleum Corp. has the cellar dug for No. 2 Miller, SW cor. SE SW, Section 17-32-2. Derby Oil Co. and Shawver's No. 1 Norrish, NW cor. Section 35-34-2, is a rig going up. The Prairie Oil & Gas Co. made location for No. 1 Fitch, NE cor. SW NW, Section 3-35-2. Location was made for No. 2 Post, NE cor. Section 34-34-2. Marland Oil Co.'s No. 1 Curry, NW cor. SW, Section 26-34-2, made 495 bbls. in sand at 3,444-85 feet.

Trego County

Central Commercial Oil Co.'s No. 1 Ellis, NE cor. SW NE, Section 20-13-21w, was completed for 194 bbls. in sand at 3,960-72 feet.

SOUTHWEST WILDCATS

(Continued from Page 55)

County, on a drill stem test came in a nice little gas well at 620 feet. The location is about 2 miles northeast of where Henderson Coquat drilled three wells a few years ago. Magnolia located a little gas in that part of the country also. The probability is now that the field will be developed and there will be an effort to find deeper and bigger production.

Guadalupe County

South of Seguin 3½ miles, W. J. Walton's No. 1 G. Nolte got quite a little gas well at 1,474 feet in Taylor marl. While there are 12 leases being tested in Guadalupe County at this time this is the only one that created interest last week. It is a rule of thumb with some oil men in Gaudalupe that a showing of gas in the Taylor marl means that the well is too far west. The test has helped to prove the structure, however. L. W. Conners' No. 1 William Weinaug, several miles southeast of Seguin, with top of chalk at 2,118 feet, looks a little low.

The Texas Company's No. 1 Dallas Wilson has a good start and is down several hundred feet. Quite a number of oil men are betting on it. Geology was worked out with the help of some logs of some old dry holes and it is starting up with considerable sentiment in its favor.

Calhoun County

It was lately reported in The Oil and Gas Journal that B. F. Thompson's No. 1 Thomas in Calhoun County had been abandoned at 2,748 feet. This was incorrect. The well has been standing at 2,748 feet for some weeks but is now about to resume drilling and will go to 3,500 feet or deeper.

M. O. Rayor is making another effort to find production in Caldwell County between the old Luling and the new Joe Bruner Pool. Logs of wells in that 5-mile stretch of territory seem to prove a fault line and the consideration is whether the displacement is enough to allow for accumulation of oil. Rayor's No. 1 Keefer is now rigging up to test the matter out.

Gas Ridge west of San Antonio that continually attracts the attention of every oil man that comes into contact is due for a test of Edwards lime, one of the first to be made. Gas is being produced from the Taylor marl at the contact of the Austin chalk. One Edwards lime well in the field made a good water well slightly spoiled by gas and oil. The new test will probably be made on the fault line lying to the southeast of that.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

DUVAL COUNTY

Magnolia Petroleum Co.'s No. 1 Corbett, Sur. 96 ..... Rig.

JIM HOGG COUNTY

Deep Rock Oil Co.'s No. 1 Kelsey ..... Rigging up.

STARR COUNTY

Ohio Oil Co.'s No. 1 Bass, Por. 76, Blk. 71 ..... Drilling.
U. S. Oil & Gas Co.'s No. 1 Kelsey, Por. 76, Blk. 11 ..... Standing.
The Texas Company's No. 1 V. C. de Guerra, Por. 68 ..... Drlg. 3,720 ft.

WEBB COUNTY

G. S. Lumpkin's No. 1 H. Yeager, Por. 33-34-35 ..... Location.
L. W. Nelson's No. 1 Moglia, Sur. 672 ..... Tested salt water, 2,790 ft.
Usher Carson's No. 2 D. Benavides, Sur. 1,613 ..... Standing 1,005 ft.

ZAPATA COUNTY

National Oil Co.'s No. 1 D. B. Adams ..... Standing 690 ft.
Buck & Coursey's No. 1 Garza, Blk. 47 ..... Drlg. deeper 928 ft.
Buck & Coursey's No. 1 Trevino, Sur. 1 ..... Rigging up.

ATASCOSA COUNTY

Amphion Oil Co.'s No. 1 Sam Schlisser ..... Drlg. 2,100 ft.

BASTROP COUNTY

Gypsy Oil Producing Co.'s No. 1 Lottman estate ..... Drlg. 2,567 ft.
Gulf Production Co.'s No. 2 Bell, Riley Sur. ..... Location.
Jim Harper and others' No. 1 R. R. Mitchell ..... Location.
Howell Oil Corp.'s No. 1 F. Wichman ..... Drlg. 600 ft.
Humble Oil & Refining Co.'s No. 1 B. Haywood ..... Location.
Moore & Ortman's No. 1 Ortman, Andrew Graham Sur. .. Location.
E. W. Ogden's No. 2 M. M. McCall, Stephen F. Austin Sur. .. Stuck drill stem 2,912 ft.
Frank Rundis' No. 1 fee ..... Drlg. 700 ft.

BEXAR COUNTY

Balcones Oil Corp.'s No. 1 F. A. Jackie ..... Topped Anacacho 1,540 ft.
Indian Creek Oil & Gas Co.'s No. 1 W. Wolfsohl ..... Running casing 1,597 ft.
Moore-Jauer's No. 1 Holly R. Ellison ..... Drlg. 1,285 ft.
J. Morgan Russell's No. 1 G. A. C. Halff ..... Setting casing 20 ft.
E. G. Potter's No. 1 Watson, B. Martinez Sur. ..... Drlg. 1,488 ft.

BLANCO COUNTY

J. E. Forbes and others' No. 1 E. Bruckner ..... Drlg. 200 ft.
Sam Hohenstein & P. H. Burtner's No. 1 T. Beauchamp .. Location
Albert Moursund's ..... Location
W. W. Rains and others' No. 1, Survey 310 ..... Location
Robt. A. Rodson's No. 1 Glasscock ..... Waiting on casing 962 ft.

BROOKS COUNTY

A. W. Dinn's No. 1 J. G. Ramas, Block 5 ..... Drlg. 400 ft.
A. W. Dinn's No. 1-B Garcia ..... Waiting on fuel 450 ft.
A. W. Dinn's No. 1 Salado, Block 5 ..... Location.
Houston Oil Co. of Texas' No. 1 Lassiter, Survey 69 ..... Drlg. 1,740 ft.

CALDWELL COUNTY

H. C. Ratcliff's No. 1 J. E. Cardwell, J. P. Bell Survey ... Location.
John T. Callahan and others' No. 1 W. Ellison ..... Ready to spud in.
M. O. Rayor's No. 1 J. Keefer ..... Rigged up.
Russell's No. 1 Hill, McCullough Survey ..... Standing 547 ft.
Whittington and others' No. 1 J. G. Horner ..... Standing 1,320 ft.

EDWARDS COUNTY

A. M. Griffith's No. 1 Wardlaw ..... Shut down 2,050 ft.

FAYETTE COUNTY

W. J. Kelly's No. 1 Burke ..... Drlg. 280 ft., rock.
Marshall & Moore's No. 1 John A. Kerr ..... Drlg. 2,485 ft.

GOLIAD COUNTY

Humble Oil & Ref. Co.'s No. 1 A. E. Taylor ..... Drlg. 500 ft.

GONZALES COUNTY

Alexander & Smith's No. 1 Billings ..... Shut down 600 ft.
Joe Bruner's No. 1 R. D. and J. C. Miller ..... Moving in boiler 2,712 ft.
Crown Petroleum Co.'s No. 1 Hattenback ..... Drlg. 1,950 ft.
Finnell & Elam's No. 1 Robinson, Liverpool Survey ..... Shut down 900 ft.
Hoffman and others' No. 1 Steubing, John Smith Survey .. Location.
Linderman Brothers' No. 1 F. H. Frampton ..... Drlg. 1,000 ft.
Fort Bend Oil Co.'s No. 1 C. E. Ham ..... Cored shale formation 1,450 ft.
Frank Sorrell's No. 2 Wilkenson ..... Standing 174 ft.

GUADALUPE COUNTY

W. E. Clark and others' No. 1, Survey M. Miller ..... Location.
L. W. Conner and others' No. 1 William Weinaug ..... Drlg. 2,125 ft.
Grayburg Oil Co.'s No. 2 Sophie Haensel ..... Location.
A. G. Kifer's No. 1 B. B. Dix ..... Standing 1,050 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Ramon Gonzales ..... Location.
Miller Brothers' No. 1 Gib Springs ..... Tested 2,624 ft., tester and joint above came up covered with oil and dobe.
T. H. Poole's No. 1 C. Woehler, John King Survey ..... Drlg. 2,354 ft.
Sinclair Oil & Gas Co.'s No. 1 Ed Tewes ..... Derrick, moving in rig.
L. W. Stieren's No. 1 S. H. Herman, Ragsdale Survey ... Drlg. 1,015 ft.
Tidal Oil Co.'s No. 1, Survey Williamson ..... Location.
The Texas Company's No. 1 Dallas Wilson ..... Drlg. 300 ft.
W. J. Walton's No. 1 G. Nolte ..... Drlg. 600 ft.

KARNES COUNTY

Hurador Oil Co.'s No. 1 W. E. Porter ..... Drlg. 2,060 ft.
Scott Townsend and others' No. 1 Ruckman ..... Drlg. 1,710 ft.

KERR COUNTY

McMan Oil & Gas Co.'s No. 2 Walter Schreiner ..... Location.
L. R. Page and Associates' No. 1 Real ..... Drlg. 1,040 ft.

KIMBLE COUNTY

Carl L. Bryant's No. 1 C. E. Lambert ..... Ready to spud in.
H. A. McLean & Jamison's No. 1 R. F. Cannon ..... Oil showing, 600 ft.
J. B. Lindsay's No. 1 G. C. Anderson ..... Setting 15½-in. casing.

KINNEY COUNTY

Lloyd Oil Co.'s No. 1 G. B. Moore, Survey 117 ..... Shut down, 1,000 ft.

LASALLE COUNTY

J. G. Nix's No. 1 Coleman, Survey 68 ..... Rigging up.

MAVERICK COUNTY

Ryan Consolidated Petroleum Co.'s No. 2 Indio Ranch .... Total depth 1,320 ft.
Rycade Oil Co.'s No. 3 Chittim ..... Drlg. 3,627 ft.
Rycade Oil Corp.'s No. 4 J. M. Chittim ..... Drlg. 3,050 ft.
Rycade Oil Co.'s No. 4 Sullivan ..... Drlg. 1,300 ft.
The Texas Company, 5 miles west Darling Switch ..... Moving in material.

MEDINA COUNTY

Pat Armstrong's No. 1 C. W. Butts ..... Derrick.
California-Medina's No. 1 Rothe ..... Drlg. 3,426 ft.
Donaldson Oil Co.'s No. 2 Adams ..... Location.
Lynch and others' No. 1 Mott ..... Standing 580 ft.
Pearson Oil Co.'s No. 1 Suburban Farms ..... Making gas 1,070 ft.
Rawdon-Hughes and others' No. 1 Bendele, Survey 593 .. Drlg. 815 ft.
Rawdon-Hughes and others' No. 1 A. L. Haegelin ..... Location.
Rawdon-Hughes and others' No. 2 Bendele ..... Standing 937 ft.
Cecil Switzer's No. 1 Zerr ..... Fishing 3,700 ft.
W. W. Woodworth's No. 1 Reinhart, J. Hall Survey ..... Shut down 1,964 ft.
Zigzag Oil Co.'s No. 1 San Antonio Sub. Irrig. Farms, Inc. .. Drlg. 2,121 ft.

MILAM COUNTY

J. M. Burkhead's No. 1 C. Weigham ..... Drlg. 1,690 ft.
E. L. Chapman's No. 1 E. G. Knight ..... Drlg. 400 ft.
E. L. Chapman's No. 1 J. M. Gilchrist ..... Drlg. 2,343 ft.
H. E. Elliott and others' No. 1 J. C. Moore ..... Fishing 1,742 ft.
Hill & Bonwell's No. 1 B. Booher, James Welch Survey .. Drlg. 2,007 ft.
Wilson and others' No. 1 Johnson & Stiles ..... Location.
Elbert Williams' No. 1 Tom Shigut ..... Shut down 2,000 ft.
Milam Oil & Gas Co., 4 miles southeast of Rosebud ..... Drlg. 600 ft.
A. H. Wray's No. 1 D. D. Fowler ..... Setting casing 302 ft.

McMULLEN COUNTY

Natt Holman's No. 1 Shiner, H. M. Brewer Survey ..... Standing 796 ft.

NUECES COUNTY

Nueces River Basin Dev. Co.'s No. 1 F. C. Allen ..... Drlg. 3,500 ft.
Pearson and others' No. 1 Bluntzer ..... Standing 3,507 ft.
R. & G. Corp.'s No. 1 Emily Wright Perkins ..... Standing 3,510 ft.
R. & G. Corp.'s No. 1 Roberts ..... Location.
R. & G. Corp.'s No. 1 Ragland ..... Standing 3,003 ft.

SAN PATRICIO COUNTY

Houston Gulf Gas Co.'s No. 3 Welder ..... Coring 3,100 ft.
Magnolia Petroleum Co.'s No. 1 Miller Ranch ..... Derrick.

VICTORIA COUNTY

Humble Oil & Ref. Co.'s No. 3-A J. J. Welder ..... Drlg. 2,946 ft.

WILLIAMSON COUNTY

J. C. Hawkins, 1½ miles northwest discovery well ..... Location.

ZAVALA COUNTY

Tritex Oil Co.'s No. 1 Clay Burns ..... Drlg. 780 ft.
Tritex Oil Co.'s No. 4 West ..... Drlg. 795 ft.
Tritex Oil Co.'s No. 1 Childress ..... Drlg. 1,095 ft.
Witherspoon Oil Co.'s No. 1 Ike Pryor ..... Setting casing 550 ft.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 58)

Humble Oil & Refg.'s No. 3 Hamner fee ..... Location.
Humble Oil & Refg. Co.'s No. 2 Dew Bros. ..... Rig.
Humble Oil & Refining Co.'s No. 5 Hamner fee ..... Rig.

HUMBLE—HARRIS COUNTY

Humble Oil & Refg. Co.'s No. 1 Williams, south side deep test ..... Tested salt water 4,888 ft.; pulling tubing.
Humble Oil & Refg. Co.'s No. 1 Glass, south ..... Rig up.
Humble Oil & Refg. Co.'s No. 2 Williams, south ..... Rig up.
Marland Oil Co.'s No. 1 Cezwaux, south side ..... No report; previous report 4,275 ft.
Harvey Smith et al's No. 1 Rosenthall, north side ..... No report; previous report 1,229 ft.
So. Texas Pet. Co.'s No. 5 Morris, south side ..... Drlg. hard shale and lime 5,003 ft.
So. Texas Pet. Co.'s No. 6 Morris, south side ..... Drlg. hard shale 4,478 ft.
South Texas Petroleum Co.'s No. 7 Morris ..... Rig.
So. Texas Pet. Co.'s No. 1 Burt, south side ..... Set 800 ft. 6⅝-in. screen 5,833 ft.; to test.
Sun Oil Co.'s No. 47 River, north side ..... No report; last depth 4,412 ft.
The Texas Company's No. 40 Stevenson ..... Rig.
The Texas Company's No. 262 Landslide, south ..... Oil sand 5,332 ft.; cem. 4⅝-in. casing 4,930 ft.
The Texas Company's No. 263 Landslide, south ..... Drlg. shale 4,800 ft.
The Texas Company's No. 264 Landslide, south ..... Set 7 joints 5 3/16-in. screen 4,162 ft.; flow 600 bbls. fluid, 10 per cent water.
The Texas Company's No. 265 Landslide, south ..... Derrick.
The Texas Company's No. 21 Wheeler & Pickens, south .. Blew in dry gas 4,298 ft.; fishing screen to deepen.

The Texas Company's No. 266 Landslide ..... Derrick.
The Texas Company's No. 29 C.O.&G. ..... Rig.
The Texas Company's No. 35 Koehler ..... Rig.

BLUE RIDGE—FORT BEND COUNTY

Gulf Production Co.'s No. 15 Luscher, east side ..... Sidetracking 3,112 ft.; total depth 4,501 ft.
Gulf Production Co.'s No. 7 Invincible (old well) ..... To deepen.
Moody Corp.'s No. 8 West-Schenck ..... Rig.
Navarro Oil Co.'s No. 1-C Robinson, northwest ..... Drlg. hard sand 4,433 ft.
Sinclair Oil & Gas Co.'s No. 3 Blakely (workover) ..... To deepen 4,321 ft.
South Texas Petroleum Co.'s No. 1 Lee (workover) ..... Drlg. 3,740 ft.
South Texas Petroleum Co.'s No. 1 Blakely (workover) ... Drlg. 4,205 ft.

PIERCE JUNCTION—HARRIS COUNTY

Abercrombie & Harrison's No. 1 Ritter ..... To work over; formerly aband. 5,558 ft.
Gulf Production Co.'s No. 29 Taylor (work-over) ..... Drlg. lime and shale 4,241 ft.
Gulf Production Co.'s No. 30 Taylor, east ..... Drlg. shale and lime 4,311 ft.
Gulf Production Co.'s No. 3 Fitzsimmons-Hammon ..... Comp. flowing 725 bbls. pipe line oil 4,753 ft.
Moody Corp.'s No. 2 Calvert, northeast ..... Drlg. 2,636 ft.
Moody Corp.'s No. 2-A Whitehead, northeast ..... Set 24-ft. screen 4,407 ft.; flowing 1,500 bbls. oil 26.7 gravity at 82 degrees.
Moody Corp.'s No. 5-B Settegast ..... Drlg. 1,096 ft.
Moody Corp.'s No. 1 Herman, southwest (old well) ..... Drlg. 4,689 ft.
Navarro Oil Co.-Humble Oil & Refg. Co.'s No. 4 Dooley, east ..... Drlg. surface formations 179 ft.
Navarro Oil Co.-Texas Exploration Co.'s No. 16 Dooley, east side ..... Drlg. gumbo and lime 2,385 ft.
Navarro Oil Co.'s No. 4-B Cain ..... Drlg. hard sand 2,275 ft.
Pure Oil Co.'s No. 1 Herman estate, southwest ..... Drlg. shale 4,598 ft.
Rio Bravo Oil Co.'s No. 8-A Settegast (old well) ..... Drlg. gumbo and lime 4,560 ft.
Rio Bravo Oil Co.'s No. 14-A Settegast, west ..... Drlg. broken sandy lime 3,104 ft.
Rio Bravo Oil Co.'s No. 15-A Settegast, southwest ..... Drlg. sand 4,324 ft.
Saxet Gas Co.'s No. 2 Herman estate, southwest ..... Drlg. 4,359 ft.
Saxet Gas Co.'s No. 3 Herman estate, southwest ..... Drlg. 3,062 ft.
Smith et al's No. 3 Parson (old well), northwest ..... Junked and abnd. 4,767 ft.
J. T. Barron's No. 3 Fitzsimmons ..... Derrick.
Shaw & Texas Exploration Co.'s No. 2-F Fitzsimmons... Derrick.
Shaw and Texas Exploration Co.'s No. 2-BFitzsimmons (workover) ..... Drlg. 4,876 ft.
T. G. Shaw's No. 1 Dooley ..... Drlg. 1,112 ft.

LIBERTY—LIBERTY COUNTY

Empire Gas & Fuel Co.'s No. 3 Goggan ..... Rigged.
Navarro Oil Co.'s No. 5 Baldwin Community ..... Rig.
Pierce & Rogers' No. 1 Pickett ..... Cavity 406 ft.
Sun Oil Co.'s No. 45 Mitchell ..... Rigged up.
Sun Oil Co.'s No. 46 Mitchell ..... Location.
The Texas Company's No. 21 Staiti ..... Drlg. rock 1,315 ft.
The Texas Company's No. 3 Pickett ..... Preparing to test.
Vacuum Oil Co.'s No. 11 Barrett ..... To pump 2,817 ft.
Yount Lee Oil Co.'s No. 17 Mitchell ..... Drlg. gumbo 1,750 ft.

HULL—LIBERTY COUNTY

Daisetta Oil Co.'s No. 1 Wilson ..... Fishing 2,043 ft.
Empire Gas & Fuel Co.'s No. 21 Barngrover ..... Testing oil sand 3,832 ft.
Gulf Production Co.'s No. 93 Phoenix ..... Drlg. 3,637 ft.
Humble Oil & Ref. Co.'s No. 4 Hooks-Spell (old well) .... Pulling liner to deepen 3,667 ft.
Republic Production Co.'s No. 24 Dolbear (old well) .... Drlg. 2,041 ft.
Republic Production Co.'s No. 112 Dolbear (workover) ... To pump 1,938 ft.
Republic Production Co.'s No. 139 Dolbear (old well).... Drlg. 2,267 ft.
Republic Production Co.'s No. 1 Taylor ..... Drlg. 4,312 ft.

BIG CREEK—FORT BEND COUNTY

Benedum & Trees' No. 2 Ahlers ..... Drlg. 2,232 ft.
Gulf Prod. Co.'s No. 37 Davis (old well) ..... Sidetracking 3,600 ft.
Gulf Production Co.'s No. 54 Davis ..... Drlg. 1,602 ft.
The Texas Company's No. 2 Wheat (old well) ..... To deepen.
The Texas Company's No. 5 Wheat (workover) ..... Pumping 200 bbls. oil 3,247 ft.
Navarro Oil Co.'s No. 3 Haussler (former gas well)..... Washing 3,425 ft.
Navarro Oil Co.'s No. 4 Davis ..... Location.

NASH—BRAZORIA COUNTY

Rycade Oil Corp.'s No. 26 Wisdom ..... Drlg. gumbo 3,933 ft.

BATSON—HARDIN COUNTY

Ada Belle Oil Co.'s No. 127 Producers ..... Drlg. 776 ft.
Ada Belle Oil Co.'s No. 128 Paraffine ..... Location.
Capitol Oil Co.'s No. 11 Hodges ..... Pumped small amount oil and sanded 3,190 ft.
Gulf Production Co.'s No. 18 Knight fee (old well) .... Pumping salt water 1,078 ft.
Hill & Dowell's No. 98 Milholm ..... Rigging up to pump 1,169 ft.
Paraffine Oil Co.'s No. 46 Paraffine ..... Standing 1,248 ft.
Paraffine Oil Co.'s No. 80 Paraffine ..... Drlg. 659 ft.

SOUR LAKE—HARDIN COUNTY

Gulf Prod. Co.'s No. 3 Thomason (workover) ..... Bailed salt water 4,243 ft.
Humble Oil & Refg. Co.'s No. 2-C Jackson (old well).... Drlg. 1,879 ft.
Lake View Oil Co.'s No. 60 Hardin ..... Drlg. 1,172 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 37-C ..... Rig.
Rio Bravo Oil Co.'s No. 78-C ..... Location.
Weldon Oil Co.'s No. 19 Hooks ..... Drlg. 1,189 ft.

ORANGE—ORANGE COUNTY

Brownie Babbette Oil Co.'s No. 12 McLean (old well).... Pumping 35 bbls. fluid, 60 per cent oil, 4,029 ft.
Orange Pet. Co.'s No. 3 Berwick (old well) ..... Rigged up to pump 3,293 ft.
Rex Petroleum Co.'s No. 2-B Carbello (old well)..... Drlg. 3,289 ft.
Tillery Oil Co.'s No. 2 State (workover) ..... Sidetracking at 2,970 ft.

GOOSE CREEK—HARRIS COUNTY

Humble Oil & Ref. Co.'s No. 75 Simms-Smith ..... Drlg. shale 4,615 ft.
C. T. Rucker's No. 1 Jones ..... Shut down 832 ft.
Russell Farrell's No. 5 Gillette (old well) ..... Salt water 2,562 ft.; pulling wash pipe.
Lee & Scott's No. 1 Scott ..... Rig.
W. C. Turnbow's No. 6 Scorrega (old well) ..... Drlg. 1,914 ft.

SPINDLETOP—JEFFERSON COUNTY

Gulf Prod. Co.'s No. 8 Roche (workover) ..... Drlg. 2,691 ft.
Sun Oil Co.'s No. 11 McLean (workover) ..... Drlg. 5,425 ft.
Unity Oil Co.'s No. 14 Gladys City ..... Oil standing; to pump.
Unity Oil Co.'s No. 15 Gladys ..... To pump.
Yount Lee Oil Co.'s No. 14 McFaddin (workover) ..... Drlg. sand 3,675 ft.
Yount Lee Oil Co.'s No. 73 McFaddin (old well) ..... Comp. flowing 1,600 bbls. 3,275 ft.
Yount Lee Oil Co.'s No. 94 McFaddin ..... Flowing by heads.
Yount Lee Oil Co.'s No. 105 McFaddin ..... Drlg. salt 4,350 ft.
Yount Lee Oil Co.'s No. 106 McFaddin ..... Drlg. 3,855 ft.
Yount Lee Oil Co.'s No. 107 McFaddin ..... Drlg. gumbo 1,558 ft.
Yount Lee Oil Co.'s No. 4 fee (workover) ..... Drlg. shale and lime 5,328 ft.
Yount Lee Oil Co.'s No. 17 Gladys City (workover) .... Pulling screen to deepen.
Yount Lee Oil Co.'s No. 36 Gladys City (workover) ..... Drlg. shale and lime 5,851 ft.
Yount Lee Oil Co.'s No. 43 Gladys City (workover) ..... Drlg. shale and lime 3,927 ft.
Yount Lee Oil Co.'s No. 91 Gladys City ..... Drlg. sand 3,821 ft.
Yount Lee Oil Co.'s No. 93 Gladys City ..... Drlg. 3,900 ft.
Yount Lee Oil Co.'s No. 94 Gladys City ..... Drlg. gumbo and lime 2,973 ft.

WEST COLUMBIA—BRAZORIA COUNTY

Humble Oil & Refg. Co.'s No. 3 Smith ..... Rig.
The Texas Company's No. 24 Arnold ..... Rig.

HIGH ISLAND—GALVESTON COUNTY

Gulf Production Co.'s No. 9 Smith ..... Drlg. 2,043 ft.
Marrs McLean's No. 11 Cade (old well) ..... Drlg. 3,764 ft.
Marrs McLean's No. 15 Cade ..... Drlg. 3,405 ft.

DAMON MOUND—BRAZORIA COUNTY

Cullen & West's No. 1 Smith ..... Drlg. 1,984 ft.
Sinclair Oil & Gas Co.'s No. 6 Norton ..... Drlg. sandy shale 4,114 ft.
Leonard Petroleum Co.'s No. 4 Wisdom ..... Drlg. hard sand 3,790 ft.

MARKHAM—MATAGORDA COUNTY

Rycade Oil Corp.-Humble Oil & Ref. Co.'s No. 6-A Kountze ..... Pulling liner to deepen 3,797 ft.
West Prod. Co.'s No. 1 Myers ..... Drlg. lime 4,735 ft.

ORCHARD—FORT BEND COUNTY

Gulf Prod. Co.'s No. 19 Moore ..... Drlg. 4,112 ft.

NORTH DAYTON—LIBERTY COUNTY

Duho Oil Co.'s No. 7 Quintette ..... Location.
Fort Bend Oil Co.'s No. 1 Ballarack ..... Drlg. 4,327 ft.
Harrison Oil Co.'s No. 4 Quintette ..... Derrick.
Sun Oil Co.'s No. 2 Kovelcik ..... Coring 5,100 ft.

REFUGIO—REFUGIO COUNTY

Houston Gulf Gas Co.'s No. 4 Ryals ..... Sand showing oil 3,663-67 ft.; set screen to test.
Houston Gulf Gas Co.'s No. 9 Lambert ..... Drlg. sticky shale 2,085 ft.
Houston Gulf Gas Co.'s No. 6 Shelly ..... Drlg. hard sand rock 3,969 ft.
Houston Gulf Gas Co.'s No. 3 Adkins ..... To make drill stem test of gas sand 3,709-15 ft.
Houston Gulf Gas Co.'s No. 2 Rooke ..... Cleaned hole 4,530 ft.; to deepen.
Houston Gulf Gas Co.'s No. 1 Buckley ..... Drlg. shale 2,706 ft.
Mission Drlg. Co.'s No. 1 Shelly ..... Tested salt water 3,586-3,628 ft.; to deepen.
Mission Drlg. Co.'s No. 1 Huddleston ..... Oil sand 3,646-53 ft.; set 8¼-in. casing; bailing.
Mission Drlg. Co.'s No. 1 O'Brien ..... Salt water sand 2,940-42 ft.; reaming.
Mission Drlg. Co.'s No. 1 Powers ..... Junked and abandoned; skidding derrick.
Mission Drlg. Co.'s No. 1 J. F. B. Heard ..... To set 6¼-in. casing; sand 3,673-79 ft.
Benedum & Trees' No. 4 Clint Heard ..... To deepen 3,695 ft.
Sun Oil Co.'s No. 1 Rea ..... Comp. flowing 700 bbls. pipe line oil, 23 gravity; sand 3,660-75 ft.
Saxet Co.'s No. 5 Clint Heard ..... Coring sand 5,020-24 ft.
Saxet Co.'s No. 8 Clint Heard ..... To make drill stem test 3,656-59 ft.
Saxet Oil Co.'s No. 1 Fox ..... Rig.
Houston Oil Co.'s No. 6 Pratt-Hewitt-Rooke ..... Sand 3,708 ft.; cem. 6¼-in. casing 3,689 ft.
Houston Oil Co.'s No. 1 F. Rooke ..... Set 4½-in. screen 3,677 ft.
Houston Oil Co.'s No. 12 Rooke ..... Set 12½-in. surface casing 473 ft.
Houston Oil Co.'s No. 6 Wilson Heard ..... Swabbed salt water 3,692 ft.; plugging to 3,692 ft.
Houston Oil Co.'s No. 7 Wilson Heard ..... Comp. 475 bbls. fluid, 25 bbls. oil, 3,691 ft.
Houston Oil Co.'s No. 12 Fannie Heard ..... Coring 3,419 ft.
Korona Oil Co.'s No. 1 Reilly ..... Shut in gasser, 775 pounds.
Olgufer Oil Co.'s No. 2 Ryals ..... Drlg. 375 ft.
Blanco Creek Oil Co.'s No. 1 St. Johns ..... Fishing pipe.
George Ball's No. 1 Terrell ..... To deepen 2,966 ft.

SOUTH LOUISIANA FIELDS

LOCKPORT—CALCASIEU PARISH

Shell Petroleum Corp.'s No. 1 Miller ..... Drlg. gummy, sticky shale 6,312 ft.
Vacuum Oil Co.-Gulf Ref. Co.'s No. 9 Miller ..... Preparing to work over 4,392 ft.
Vacuum & Gulf's No. 15 Miller ..... Drlg. sandy shale 5,715 ft.
Vacuum & Gulf's No. 3 State ..... Failed to pump; to work over, 4,400 ft.
Vacuum Oil Co.'s No. 7 Bordages ..... Location.
Vacuum Oil Co.'s No. 3-A fee ..... Location.

HACKBERRY—CAMERON PARISH

Calcasieu Oil Co.'s No. 14 Watkins ..... Comp. flowing 1,200 bbls. 3,840 ft.
Calcasieu Oil Co.'s No. 7 Valery ..... Comp. flowing 1,000 bbls. 3,800 ft.
Fraim Oil Co.'s No. 1 Duhon, Old Hackberry ..... Standing 4,384 ft.
Rycade Oil Corp.-Humble Oil & Refg. Co.'s No. 3 Gulf Land, Old Hackberry ..... Reaming 1,975 ft.; bottom 2,342 ft.
The Texas Company's No. 5-B Calcasieu Lake, East Hackberry ..... Location.

JENNINGS—ACADIA PARISH

Cline, Smith & Cline's No. 9 Conklin, Section 46-9s-2w .. Drlg. 1,796 ft.
Fred Getty's No. 3 Jennings-Clemont ..... Location.
E. L. Meyers' No. 1 Clemont-Zigler (old well) ..... To work over 1,805 ft.
Port City Oil Co.'s No. 11 Syndicate Fee, Section 46-9s-2w ..... Tested salt water 1,664 ft.
Reliable Oil Co.'s No. 2 Jennings-Heywood ..... Set strainer 1,887 ft.
Yount Lee Oil Co.'s No. 4 Crowley, northeast flank, Section 48-9s-2w ..... Coring 7,496 ft.
Yount Lee Oil Co.'s No. 5 Crowley, Sec. 48-9s-2w ..... Location.
Yount Lee Oil Co.'s No. 7 Houssiene-Latrielle, Sec. 47-9s-2w ..... Location.

EDGERLY—CALCASIEU PARISH

C. M. Crotty's No. 15 Lillard ..... Rig.
Rex Petroleum Co.'s No. 10 Hunter ..... Drlg. 2,512 ft.

VINTON—CALCASIEU PARISH

Gulf Refining Co.'s No. 66 G. & N. Gray (old well) ..... Drlg. 2,712 ft.
Marrs McLean's No. 4 Gray (work-over) ..... Drlg. 1,787 ft.
Salt Dome Oil Co.'s No. 2 Shaw ..... Drlg. 2,097 ft.
Vinton Petroleum Co.'s No. 14 Gray (work-over) ..... Sidetracking 2,121 ft.
Vinton Petroleum Co.'s No. 9 Rescue (9 acres) ..... Rig.

BAYOU BOUILLON—ST. MARTIN PARISH

Rycade Oil Corp.'s No. 4 Bouillon fee (old well) ..... To work over.
Rycade Oil Corp.'s No. 7 Bouillon Fee ..... Drlg. sand and shale 3,850 ft.
Rycade Oil Corp.'s No. 3 State (former well) ..... Milling out to workover 3,357 ft.

SORRENTO—ASCENSION PARISH

Gulf Refining Co.'s No. 15 United, Sec. 22-10S-4e ..... Rigging up.

STARKS—CALCASIEU PARISH

Gulf Refining Co.'s No. 15 Lutcher-Moore ..... Drlg. 5,700 ft.
Gulf Refining Co.'s No. 13 Industrial ..... Drlg. 6,067 ft.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 736 Fee ..... Fishing drill pipe 6,064 ft.
Union Sulphur Co.'s No. 746 Fee, Sec. 29-9s-10w ..... Rig.
Union Sulphur Co.'s No. 747 Fee, Sec. 29-9s-10w ..... Drlg. 2,005 ft.
Union Sulphur Co.'s No. 748 fee, Section 29-9s-10w..... Drlg. 2,240 ft.
Union Sulphur Co.'s No. 749 fee, Sec. 29-9s-10w ..... Derrick.

SWEET LAKE—CAMERON PARISH

Pure Oil Co.'s No. 7 Yount Lee ..... Drlg. gumbo 5,644 ft.

ANSE LA BUTTE—ST. MARTIN PARISH

Yount Lee Oil Co.'s No. 5 Louisiana Pet. Co. ..... Drlg. 2,705 ft.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

Flanigan & Mewis' No. 1 Mewis, James P. Stevenson sur., east of Bellville ..... Shut down 3,780 ft.
Whittington et al's No. 1 Lass, 4 miles northwest of Bellville ..... Rig.

BRAZORIA COUNTY

Thomas Faust et al's No. 4 fee ..... Drlg. rock 773 ft.
Shell Petroleum Corp.'s No. 4 Allen, Allen dome ..... Waiting orders; total depth 5,184 ft.
Empire Gas & Fuel Co.'s No. 3 Brock, Stratton Ridge .. Hard sand and lime 4,452 ft.
Humphreys Corp.'s No. 1 Bryan, Bryan Mound ..... Drlg. gumbo 3,673 ft.

CHAMBERS COUNTY

Layne et al's No. 1 Fitzgerald ..... Drlg. 1,298 ft.
Pure Oil Co.'s No. 2 Mayes, Lost Lake ..... Shut down high water 1,992 ft.
Pure Oil Co.'s No. 3 Mayes, Lost Lake ..... Shut down high water 1,871 ft.

FORT BEND COUNTY

Gulf Production Co.'s No. 12 Trone, Long Point ..... Spudded.
Grayburg Oil Co.'s No. 1 Ranson ..... Rig.
Humble Oil & Refg. Co.'s No. 1 Miller, Rosenberg ..... Drlg. hard, sandy shale 3,393 ft.

HARRIS COUNTY

Baldwin and associates' No. 1 Kitzman, Cypress ..... Set 5 3/16-in. casing 3,970 ft.; bottom shale and lime 4,014 ft.
Humble Oil & Refg. Co.'s No. 2 Irvin ..... Drlg. gumbo 900 ft.
Humble Oil & Refg. Co.'s No. 5 Warren, Hockley ..... Made drill stem test 4,814 ft.; showed dry gas.
Humble Oil & Refg. Co.'s No. 1 Woodburn, Genoa ..... Drlg. sand rock 3,368 ft.
Little York Oil Co.'s No. 1 Davis, Little York ..... Shut down 3,827 ft.
York & Robertson's No. 1 Garrett, Harris & Carpenter survey ..... Location.

JACKSON COUNTY

The Texas Company's No. 1 Lawrence ..... Drlg. shale 3,225 ft.
Wright Bros.' No. 2 Lea ..... To deepen 2,670 ft.

JEFFERSON COUNTY

Bleakie Oil Co.'s No. 1 Tolliver, Dyches survey ..... Shut down; shale and lime 2,589 ft.
Deep Test Oil Corp.'s No. 1 Faith-McFadden ..... Drlg. 3,687 ft.

Gulf Production Co.'s No. 2 Burrell Fannette ..... To work over.
Nederland Oil & Dev. Co.'s No. 1 Young, Nederland ..... Shut down 2,520 ft.
River Oil Corp.'s No. 1 Ship Channel, Brown survey ..... Shut down; gumbo 1,721 ft.
Shell Petroleum Corp.'s No. 1 Heisig, Hampshire ..... Cem. 9⅝-in. casing 4,522 ft.; total depth 5,341 ft.
The Texas Company's No. 1 Pipkin, Big Hill ..... Set strainer 5,960 ft.; blowing 1,000,000 ft. dry gas, 2,500 pounds pressure.
Vacuum Oil Co.'s No. 1 Herbert-Broussard, T. & N. O. survey No. 208 ..... Building derrick.

LIBERTY COUNTY

Gulf Production Co.'s No. 2 Bert Hankamer ..... Rig.
Humble Oil & Refg. Co.'s No. 5 Sterling, Moss Bluff .... Drlg. shale 3,748 ft.
Harvey Smith and asociates' No. 1 Moore's Bluff, Brunson Sur. ..... Rigging.
Pure Oil Co.'s No. 1 Liberty, Moss Bluff ..... Started drilling; cem. 18⅝-in. casing 40 ft.
Republic Production Co.'s No. 1 Myslivec, Moore survey .. No report.

MATAGORDA COUNTY

Crossland and associates' No. 1 Hawkins, Shepherds Mott. Drlg. sandy lime 4,424 ft.

MONTGOMERY COUNTY

Cullen and associates' No. 1 Chase, near Hufsmith ..... Drlg. 1,850 ft.
Harper Drilling Co.'s No. 1 Gay, W. Landrum survey .. Abandoned 3,015 ft.
Kelley-Baker et al's No. 1 Juerges ..... Location.

ORANGE COUNTY

The Texas Company's No. 1 Polk, Port Neches ..... Building foundations.
The Texas Company's No. 1 Starks, Port Neches ..... Building foundations.
Veteran Oil Co.'s No. 1 Reed, A. Nelson survey ..... Drlg. shale 4,275 ft.

WALLER COUNTY

Kirby Petroleum Co.'s No. 1 Vaughn, San Felipe ..... Location.

SOUTH LOUISIANA
ASCENSION PARISH

Pickard & Geisman's No. 1 Desire Breaux, Darrow ..... Drlg. shale 1,213 ft.
Big Dome Dlg. & Dev. Co.'s No. 1 Reardom, Darrow .... Drlg. 4,600 ft.
Triumph Oil Corp.'s No. 2 Lacey, Sec. 29-10s-4e ..... Drlg. sand 2,731 ft.

CALCASIEU PARISH

Wilfred LaHay's No. 2 James, Section 14-10s-13w ..... Shut down 3,365 ft.
J. O. Davis' No. 1 Mims, Section 20-9s-7w ..... Drlg. gumbo 5,210 ft.

CAMERON PARISH

Shell Petroleum Corp.'s No. 11 Watkins, Black Bayou .. Plugged from 1,244 ft. to 992 ft.; set strainer and swabbing.
Shell Pet. Corp.'s No. 12 Watkins, Black Bayou ..... Moving in.
Shell Pet. Corp.'s No. 13 Watkems, Black Bayou ..... Location.
The Texas Company's No. 4-A Calcasieu Lake, Calcasieu Lake Dome ..... Location.

EVANGELINE PARISH

The Texas Company's No. 1 Guillory, Pine Prairie ..... Drlg. rock 2,450 ft.

IBERIA PARISH

Gulf Refining Co.'s 9-Z State, Loreauville ..... Abandoned 900 ft.
The Texas Company's No. 4-A Vermillion Bay ..... Location.

IBERVILLE PARISH

Shell Petroleum Corp.'s No. 3 Wilbert, White Castle .... Sticky shale and sand 5,626 ft.; set 6⅝-in. casing 5,612 ft.
Standard Oil Co.'s No. 2 Wilbert, Bayou Blue ..... Abnd. in salt 3,454-3,617 ft.
Standard Oil Co.'s No. 3 Wilbert, Bayou Blue ..... Canal dredged to location.
Standard Oil Co.'s No. 1 Schwing, Bayou Blue ..... Abandoned in salt 5,010 ft.
Standard Oil Co.'s No. 2 Schwing, Bayou Blue ..... Derrick.
Standard Oil Co.'s No. 3 Schwing, Bayou Blue ..... Location.
Standard Oil Co.'s No. 4 Schwing, Bayou Blue ..... Location.
Standard Oil Co.'s No. 5 Schwing, Bayou Blue ..... Derrick.

JEFFERSON DAVIS PARISH

Vacuum Oil Co.'s No. 2 DeVilbiss, Roanoke ..... Location.

PLAQUEMINE PARISH

The Texas Company's No. 2 Garden Island Bay, Sec. 107-23s-32e ..... Location.
Humble Oil & Refg. Co.'s No. 1 State, Sec. 2-20s-26e..... Location.

ST. BERNARD PARISH

St. Bernard Oil & Gas Co.'s No. 1 fee, Sec. 15-14s-15e.... Location.

ST. JAMES PARISH

Convent Oil Co.'s No. 2 Reynaud, Sec. 1-12s-4e ..... Location.

ST. LANDRY PARISH

Gulf Refining Co.'s No. 1 Gaudet, Point Barre ..... Tested salt water 3,799-3,828 ft.

ST. MARTIN PARISH

Ohio Oil Co.'s No. 3 Martin, Hager dome ..... Standing 4,490 ft.
The Texas Company's No. 1 Fee, Hager Dome ..... Shut down; high water 1,233 ft.
The Texas Company's No. 2 St. Martin, Hager ..... Rig standing; high water.

ST. TAMMANY PARISH

St. Tammany Oil Co.'s No. 2 Fritchie, Sec. 35-8s-14e .... Oil sand 1,895-1,903 ft.

TANGIPAHOA PARISH

Joan Development Co.'s No. 1 Hilton, Sec. 20-9s-9e ..... Sand 3,659 ft.

TERREBONNE PARISH

Southern Gas Co.'s No. 1 Waterproof, Houma ..... Testing gas sand 1,652 ft.
The Texas Company's No. 1 L. L. & E., Four Isle Bayou .. Drlg. hard lime 527 ft.
The Texas Company's No. 1-A Timballer Bay, Section 19-23s-20e ..... Gumbo 2,330 ft.; set 9¼-in. casing.
The Texas Company's No. 2-A Dog Lake Bayou, 400 ft. south of No. 1 ..... Location.
The Texas Company's No. 1-B Dog Lake, Sec. 6-22s-16e .. Location.
The Texas Company's No. 1-B Lake Pelto, Section 8-23s-18e ..... Set 9¼-in. casing to test oil sand 1,268 ft.; drlg. plug.
The Texas Company's No. 1 Taylor, East Bay Junop Dome ..... Driving piling.
The Texas Company's No. 2-A Lake Barre, Section 30-21s-20e ..... Location.
The Texas Company's No. 2B Bay Coon Road, Sec. 17-22s-18e ..... Location.
The Texas Company's No. 3-B Bay Coon Road, Sec. 17-22s-18e ..... Location.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 50)

Magnolia Petroleum Co.'s No. 1 Anna Mason, 990 ft. S and 330 ft. E NW cor. SW Sec. 27-12-11 ..... Location.
Magnolia Petroleum Co.'s No. 2 W. H. Mason, 330 ft. N and W C, Sec. 28-12-11 ..... Rig.
R. O. Roy's No. 1 Rogers, Sec. 13-13-14 ..... Set 10-in. 300 ft.
D. Thomason's No. 1 Nabors, 152 ft. S and 3,162 ft. E NW cor Sec. 6-12-11 ..... Set 10-in. 80 ft.; drlg. 780 ft.

FRANKLIN PARISH

Davis and others' No. 1 Moore, 600 ft. W and 200 ft. S NE cor. Sec. 12-11-6 ..... Shut down 1,430 ft.

GRANT PARISH

L. C. Swope's No. 7 fee, NE cor. SE Sec. 18-9-1e ..... Waiting orders 100 ft.

JACKSON PARISH

George O. Baird's No. 1 Tremont, SE cor. NW SE Sec. 24-16-1w ..... Hard lime and shell 2,950 ft.

LASALLE PARISH

Tunica Petroleum Co.'s No. 47 L. & A., SE cor. Sec. 17-7-2e ..... Cemented 6-in. 826 ft.

LINCOLN PARISH

V. E. Shaw and others' No. 1 Voss, SE cor. Sec. 1-20-3 ..... Washing to bottom, total depth 2,740 ft.

MOREHOUSE PARISH

Rainbow Oil Co.'s No. 1 Louisville Cooperage Co., 990 ft. S and E NW cor. NE Sec. 33-22-8 ..... Derrick.

NATCHITOCHES PARISH

S. D. McDaniel's No. 2 Clark & Morse, 800 ft. E and 350 ft. N C Sec. 23-5-6 ..... Tested 1,000,000 ft. gas and salt water 8 ft.; shut down for orders, total depth 2,536 ft.
Robeline Oil & Gas Co.'s No. 1, NE SW Sec. 7-8-9 .... Drill stem stuck waiting orders; claim show of gas, total depth 3,230 ft.

OUACHITA PARISH

Ouachita Natural Gas Co.'s No. 2-B D'Arbonne, SE cor. Sec. 25-19-2e ..... Shut down 3,349 ft.; well under water.
Farish & Russell's No. 1 School fee, NE Sec. 16-16-4 .. Drlg. 3,835 ft.

RED RIVER PARISH

Eylers Oil Co.'s No. 1 Chaffraix, NE cor. NE SW Sec. 39-12-10 ..... Drlg. sand rock 1,872 ft.

RICHLAND PARISH

Austin & McDonald's No. 1 Millsaps, 660 ft. N and 1,980 ft. E SW cor. NW Sec. 17-17-6 ..... Cemented 6-in. 2,308 ft.
Austin & McDonald's No. 2 Millsaps, SW cor. Sec. 17-17-6 ..... Waiting orders, total depth 2,697 ft.
Austin & McDonald's No. 3 Millsaps, 1,980 ft. S and 660 ft. E NW cor. Sec. 16-17-6 ..... Location.
Austin & McDonald's No. 4 Millsaps, NW cor. Sec. 16-17-6 ..... Location.
Palmer Corp.'s No. 1 Miles, 1,320 ft. S and 680 ft. E NW cor. NE Sec. 11-17-6 ..... Tested dry at 2,476 and 2,538 ft.; arranging to deepen.

SABINE PARISH

W. J. Garnier, trustee's No. 1 Bowman-Hicks, SE cor. NE NW Sec. 16-7-12 ..... Shut down 700 ft.
R. L. Gay, trustee's No. 4 Bowman-Hicks, SE cor. NW SE Sec. 14-7-14 ..... Derrick.
R. L. Gay, trustee's No. 1 Long-Bell Lbr. Co., NE cor. NW NW Sec. 26-8-14 ..... Cemented 8¼-in. 1,839 ft.; top chalk 1,839 ft.; show of oil and gas; total depth 1,852 ft.
R. L. Gay, trustee's No. 2 Sabine Lumber Co., Sec. 23-7-14 ..... Drlg. 1,860 ft.
A. H. Tarver's No. 1 Long-Bell Lumber Co., NW cor. SW NW Sec. 29-8-13 ..... Arranging for drill stem test; total depth 3,500 ft.

UNION PARISH

J. E. Cammattee and others' No. 2 Tugwell, NE cor. NE NW Sec. 21-22-1e ..... Drlg. gummy shale 2,220 ft.
H. C. McDonald's No. 2 U. S., NW cor. SW NE Sec. 18-23-1e ..... Shut down 1,500 ft.
Sundby and others' No. 1 Security Trust, SE cor. Sec. 6-23-1e ..... Shut down waiting orders; total depth 2,300 ft.
The Texas Company's No. 1 Fuller, 1,020 ft. E and 300 ft. N SW cor. NW Sec. 9-21-2w ..... Drlg. hard lime 3,470 ft.

ARKANSAS
ASHLEY COUNTY

Atlantic Oil Producing Co. and others' No. 1 Young, Sec. 20-15-7 ..... Shut down for water, total depth 3,056 ft.

CALHOUN COUNTY

Ohio Oil Co.'s No. 1 Stout Lumber Co., NW cor. SW Sec. 31-14-12 ..... Rig.

CLARK COUNTY

Wm. Henry, trustee's No. 1 Clark, Sec. 34-9-21 ..... Shut down 1,200 ft.

COLUMBIA COUNTY

Arpeco Syndicate's No. 1 Dennis, Sec. 11-20-23 ..... Salt water on drill stem test 2,797-2,825 ft.; five joints salt water in five minutes; coring water sand 2,840 ft.
T. R. Brown, trustee's No. 1 Spencer, Sec. 18-18-22 .... Drlg. water sand 310 ft.
T. J. Bush, trustee's No. 1 Jones, Sec. 5-17-18 ..... Drlg. lime 3,215 ft.
Helena Oil & Gas Co.'s No. 1 Pickler, Sec. 19-19-22 .... Shut down 2,762 ft.

FAULKNER COUNTY

Gold Creek Oil & Gas Co.'s No. 1 Stermer, Sec. 17-4-13.. Cemented 6-in. 3,800 ft.

GRANT COUNTY

Jones & Watkins' No. 1 Meek, Sec. 5-4-11 ..... Shut down 1,400 ft.

LINCOLN COUNTY

Pine Prairie Oil & Gas Co.'s No. 1 Carter ..... Shut down 2,176 ft.

LITTLE RIVER COUNTY

Grotte and others' No. 1 Allen, Sec. 31-12-31 ..... Shut down 2,941 ft.

LOGAN COUNTY

Arkansas Natural Gas Corp.'s No. 1 Hanna, Sec. 26-7-23 ..... Fishing for tools; total depth 2,320 ft.

MADISON COUNTY

Independent Oil & Gas Co.'s No. 1 Banks & Teague, Sec. 6-16-27 ..... Cemented 6⅝-in. 2,168 ft.

OUACHITA COUNTY

Copenhaven and others' No. 1 Warnick, Sec. 2-15-17 .... Derrick.
Flaucher and others' No. 1 Buck, Sec. 7-15-17 ..... Shut down 2,465 ft.
Lohman and others' No. 1 Fogle, Sec. 18-14-16 ..... Shut down 1,540 ft.
Phillips Petroleum Co. and others' No. 1 Eagle Mills, Sec. 11-12-16 ..... Drlg. rock 385 ft.
Sundby and others' No. 1 Farris, SW cor. NW SE Sec. 27-15-15 ..... Set 10-in. at 86 ft., drlg. 540 ft.
Timberlake and others' No. 1 Wright, Sec. 25-14-18 ..... Shut down waiting orders 2,907 ft.
Wesson and others' No. 1 Booth, Sec. 12-15-19 ..... Shut down 2,203 ft.
Sam Arrendale's No. 1 Gallagher & Nelson, 200 ft. N and W SE cor. Lot 5, Sec. 18-18-17 ..... Rig.

UNION COUNTY

W. M. Coates, trustee's No. 1 McDuffie, Sec. 32-19-17 .. Coring 3,650 ft.
O. W. Estes' No. 1 Ramsey, NW cor. NW SW Sec. 24-17-14 ..... Derrick.
E. L. Foster and others' No. 1 Murphy Land Co., Sec. 22-17-17 ..... Shut down 1,400 ft.
Johnson-Gummer Co.'s No. 1 Cargile, Sec. 4-18-13 ..... Tested dry 2,292-2,312 ft.; drlg. 2,445 ft.
Johnson & Foster's No. 1 Oliver, NW cor. SE NW Sec. 18-17-13 ..... Location.
McDonald Brothers' No. 1 Mayfield, Sec. 29-19-15 ..... Shut down 2,210 ft.
Stark and others' No. 1 Ainsworth, NE cor. NW NE Sec. 8-19-16 ..... Derrick.
T. J. Woodley's No. 1 First National Bank, NW cor. Sec. 34-19-18 ..... Derrick.

WASHINGTON COUNTY

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 ..... Cemented 6-in. 1,320 ft.; shut down 1,342 ft.
Lincoln Leaseholding Syndicate's No. 1 Lincoln, Sec. 30-15-32 ..... Drlg. 500 ft.

WHITE COUNTY

Letona Syndicate's No. 1 Letona, SE cor. NW SW Sec. 35-9-8 ..... Cemented 6⅝-in. 2,975 ft.

EAST TEXAS
BOWIE COUNTY

Hooks Oil & Gas Co.'s No. 1 Lee Roseberry, L. T. King Sur. ..... Temp. abandoned, total depth 3,086 ft.

CAMP COUNTY

Rogers and others' No. 1 Enfelt, R. M. Montgomery Sur. ..... Tested dry at 1,870 ft.; shut down 1,920 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossier, E. Hughhart Sur. .. Claim show of oil and gas; shut down 1,893 ft.
Shad Harper's No. 1 W. R. Garland, J. Wagley Sur. .... Shut down 1,862 ft.
Johnson Petroleum Co.'s No. 2 Randolph Edward Dean Sur. ..... Shut down 1,440 ft.

SHELBY COUNTY

Chapperall Oil Co.'s No. 2 Holt, Matthew Moore Sur. .. Shut down for orders 3,004 ft.
Gulf Refining Co.'s No. 1 Carraway, J. H. Patterson Sur. ..... Gray lime; moving in heavier draw works; total depth 5,112 ft.

MISSISSIPPI
ALCORN COUNTY

Alcorn Petroleum Co.'s No. 1 Matthews, SE cor., Sec. 14-2s-7e ..... Shut down 1,982 ft.

CHICKASAW COUNTY

Hightower & Golson's No. 1 Flemming, NE cor. Sec. 20-13-3 ..... Shut down 1,100 ft.

CLAIBORNE COUNTY

Ben W. White's No. 1 Shannon, NE cor. Sec. 36-10-4 ..... Rebuilding derrick; total depth 2,004 ft.

HINDS COUNTY

Big Black Oil Co.'s No. 1 Southern Christian Institute, NW cor. Sec. 30-6-4 ..... Derrick pattern.
Edwards Oil Co.'s No. 4 Lewis, SE cor. SW Sec. 36-16-5 ..... Derrick pattern.
Harry Gerson's No. 1 Edward House, Blk. 16, West Jackson Subdivision City of Jackson in Twp. 5n, Range 1e ..... Derrick.
Oscar Brown's No. 1 Riverside (formerly Hennessee and others), SE cor. SE SW Sec. 23-16-5 ..... Set 12½-in. 80 ft.; shut down 1,050 ft.
Mrs. Reeder and others' No. 1 State, SE cor. NW NW Sec. 25-6-1e ..... Shut down 2,895 ft.

HUMPHREYS COUNTY

E. C. Steele and others' No. 1 C. B. Box, SE cor. SE NE, Sec. 25-14-4w ..... Set 12½-in. 60 ft.; shut down.

LAUDERDALE COUNTY

Lauderdale Oil & Gas Co.'s No. 1 Lackey, 990 ft. S and E NW cor. NE Sec. 33-8-18 ..... Rigging up.
Meridian Oil & Gas Co.'s No. 1 Hauser, Sec. 33-8-18 .... Coring 1,630 ft.
J. R. Smith Oil Co.'s No. 1 C. F. Craig, Sec. 2-6-14 ..... Derrick.

MONROE COUNTY

Amory Development Co.'s No. 1 Bourland, Sec. 2-13-19 .. Fishing 12 joints casing; total depth 2,487 ft.
Amory Natural Gas Co.'s No. 2 Carter, 1,425 ft. N and 50 ft. E SW cor. SE Sec. 7-17-13 ..... Cemented 6-in. 2,368 ft.; coring rock 2,381 ft.
Amory Petroleum Co.'s No. 1 Hall, Sec. 8-13-19 ..... Waiting orders 3,040 ft.
Arkansas Natural Gas Corp.'s No. 1 Rye ..... Waiting on 5 3-16-in. collars; total depth 3,376 ft.
Park Bowser and others' No. 1 Cowart, second hole, Sec. 2-12-19 ..... Shut down 30 ft.

WARREN COUNTY

El Dorado Oil Co.'s No. 1 Dornbush, Sec. 8-18-5 ..... Rigging up.

YALOBUSHA COUNTY

Philp Brothers' No. 1 James, Sec. 20-11-5 ..... Shut down 2,408 ft.

TENNESSEE

DECATUR COUNTY

Standard Oil Co. of Louisiana's No. 1 Wyatt ..... Drlg. 1,223 ft.
Chester County Oil Co.'s No. 1 Montgomery ..... Cemented 6-in. 1,040 ft.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 50)

Standard Oil Co.'s No. 3 Oden, 330 ft. S, 330 ft. W, NE cor. SW NE ..... Location.

CADDO—OIL CITY

W. D. Chew's No. 5 fee, Sec. 33-21-16 ..... Cmtd. 4½-in. at 2,282 ft.
W. D. Chew's No. 1-B fee, Sec. 33-21-16 ..... Cmtd. 6-in. at 1,842 ft.
W. D. Chew's No. 1-C Levee Board, 2,490 ft. W, 1,470 ft. S, NE cor., Sec. 34-21-16 ..... Derrick.
Gulf Ref. Co.'s No. 17-A Levee Board, 1,126 ft. S, 150 ft. E, NW cor. NE, Sec. 34-21-16 ..... Derrick.
Magnolia Petroleum Co.'s No. 18 Doan-Thigpen, SE cor. SW SE Sec. 6-20-15 ..... Reaming to bottom; T.D. 3,332 ft.
Magnolia Pet. Co.'s No. 4 Levee Board, 330 ft. S, 330 ft. E. NW cor. NE NE, Section 7-20-15 ..... Rig up.
C. B. Moore's No. 5 Dillon, SW cor., Sec. 22-20-15 .... Plugged back to 2,188 ft; T.D. 2,202 ft.
Shreveport Oil Corp.'s No. 1 Cheshire, NE Sec. 32-21-15 ..... Plugged back to 1,640 ft; standing 900 ft. in oil; waiting on standard rig; T.D. 2,166 ft.
Shreveport Oil Corp.'s No. 1 Guy, NW NE Sec. 32-21-15 ..... Tested S.W. with show of oil; S.D. for orders; T.D. 2,300 ft.
Simplex Oil Co.'s No. 7 Youree-Randolph, 660 ft. N and 660 ft. W C Sec. 13-20-15 ..... Tested 50,000 ft. gas at 2,300 ft; S.D. for orders; T.D. 2,326 ft.

CADDO PARISH—LEWIS

Snake Creek Oil Co.'s No. 1 Levee Board, SW NW Sec. 9-21-16 ..... Tested dry with show of oil and S.W; S.D.; T.D. 2,328 ft.

CADDO PARISH—PINE ISLAND

Dixie Oil Co.'s No. 92 Dillon, SW NW Sec. 13-21-15 .... Cored sand; no show; T.D. 6,182 ft.
Dixie Oil Co.'s No. 99 Dillon, NE SW Sec. 13-21-15 .... Coring 2,220 ft.
Dixie Oil Co.'s No. 5 Hobbs, SE cor. NW SE Sec. 21-21-15 ..... S.D. 1,673 ft.
Dixie Oil Co.'s No. 3-B Slattery, SW cor. SE Sec. 21-21-15 ..... Waiting on standard rig; T.D. 1,607 ft.
Dixie Oil Co.'s No. 3-B Wells, SE cor. SW Sec. 21-21-15 ..... Standing 200 ft. in oil; waiting on standard rig; T.D. 1,745 ft.
Magnolia Petroleum Co.'s No. 18 Dillon, NW cor. Sec. 24-21-15 ..... Trying to get seat for drill stem test; shale and sand 4,537-65 ft.

CLAIBORNE PARISH—HOMER

Oakes and others' No. 1 Richardson, NE SE Sec. 19-21-7 ..... Arranging drill stem test of 1 ft. sand; T.D. 1,112 ft.

CLAIBORNE PARISH—HAYNESVILLE

Smitherman & McDonald and others' No. 1 Miller, 825 ft. S and 660 ft. E C Sec. 17-23-8 ..... S.D. for orders; T.D. 4,780 ft.

LASALLE PARISH—URANIA

Arkansas Natural Gas Corp.'s No. 13-M Urania, NW cor. NW SE Sec. 19-10-2e ..... Cmtd. 6⅝-in. at 1,574 ft; 8 ft. sand; T.D. 1,585 ft.
O. W. Clark's No. 1 Tullos, SE SW Sec. 23-10-1e ..... Cmtd. 6-in; at 1,493 ft.
Kinney, Hardtner & Randall's No. 1 Kinney, SW SW Sec. 7-10-2e ..... Cmtd. 6-in. at 654 ft; bailed to top of liner; showed gas; S.D. for orders; T.D. 675 ft.
Louisiana Oil Refining Corp.'s No. 39-B Tremont, SE NE Sec. 25-10-1e ..... Set 10-in. at 100 ft; drlg. 150 ft.
Philp and others' No. 1 Urania, SE cor. NE NE Sec. 1-10-1e ..... S.D. waiting orders; T.D. 630 ft.
Randall and others' No. 3 Urania, Sec. 1-10-1e ..... Fish. for bailer; T.D. 675 ft.
G. W. Zoder's No. 3 King, 150 ft. N, 600 ft. W, SE cor. NE, Sec. 13-10-1e ..... Location.

LASALLE PARISH—LITTLE RIVER

Montague Oil Co.'s No. 7 Zenoria Lumber Co., Sec. 11-9-1e ..... S.D. at 400 ft.

MOREHOUSE PARISH

Grecian Bend Gas Co.'s No. 1 Seacrease, 2,025 ft. S, 203 ft. W, NE cor. SE, Sec. 14-20-4 ..... Location.
S. D. Hunter's No. 9 Allison, 660 ft. S, 660 ft. E, NW cor. Sec. 18-20-5 ..... Location.
S. D. Hunter's No. 10 Allison, 1,962 ft. E, 660 ft. S, NW cor., Sec. 18-20-5 ..... Location.
Interstate Natural Gas Co.'s No. 2 Flemming, SW NE Sec. 15-20-4 ..... Cmtd. 6-in. at 2,110 ft.
Natural Gas Producing Co.'s No. 15 Tensas, SW NW Sec. 4-22-4 ..... Cmtd. 8-in. at 900 ft.
Southern Carbon Co.'s No. 10 Tensas, NE SW Sec. 2-20-4 ..... Drlg. gas rock at 2,120 ft.
Southern Carbon Co.'s No. 11 Tensas, SE SE Sec. 31-21-4 ..... Cmtd. 12-in. at 150 ft. and 8-in. at 890 ft.
United Carbon Co.'s No. 2 Patton, 660 ft. N, 660 ft. E, SW cor. SE, Sec. 2-20-4 ..... Location.
United Carbon Co.'s No. 3 Patton, 660 ft. W, 660 ft. S, NE cor. SE, Sec. 2-20-4 ..... Location.

OUACHITA PARISH

Arkansas-Louisiana Pipe Line Co.'s (Ark. Nat. Gas Co.) No. 1 Kate Cole, 570 ft. S, 570 ft. E, NW cor. SW, Sec. 10-18-4 ..... Location.
Austin & Jordan's No. 1 H. M. McGuire, SW SW Sec. 11-18-3 ..... Cmtd. 12-in. at 205 ft.
Bahan & Bahan's No. 1 Frierson, 300 ft. S, 300 ft. E, NW cor. NE, Sec. 18-19-4 ..... Location.
J. S. Herkness' No. 7 Bowles, 1,806 ft. E, 3,165 ft. S, NW cor. NE, Sec. 20-20-5 ..... Location.
G. E. Jordan's No. 1 Anding, NW NE Sec. 18-18-5 .... Plugged back to 2,234 ft; T.D. 2,480 ft.
LaDel Producing Co.'s No. 48 fee, NE cor. NW Sec. 31-20-5 ..... Drlg. 2,092 ft.
Mack & Pipes' No. 1 Burke, NE NW Sec. 7-18-5 ..... Set 10-in. at 202 ft; drlg. 800 ft.
Magnolia Petroleum Co.'s No. 1 Central Bank, NW NW, Sec. 1-19-4 ..... S.D.; waiting orders; T.D. 185 ft.
Magnolia Petroleum Co.'s No. 1 fee 401, Sec. 2-18-3 .. Cmtd. 8⅝-in. at 2,140 ft.
Magnolia Pet. Co.'s No. 2 fee 404, 660 ft. N, 660 ft. W, SE cor., Sec. 15-19-5 ..... Location.
Magnolia Pet. Co.'s No. 3 fee 404, 660 ft. N, 660 ft. E, SW cor., Sec. 11-19-5 ..... Location.
Magnolia Petroleum Co.'s No. 4 U. S., SE NW Sec. 20-19-5 ..... Set 15½-in. 186 ft; drlg. 900 ft.
Ouachita Natural Gas Co.'s No. 10 Smith, Sec. 40-20-4 ..... Cmtd. 6-in. 2,084 ft.
Ouachita Natural Gas Co.'s No. 11 Smith, Sec. 40-20-4.... Cmtd. 6-in. 2,090 ft.
Sandidge & Sackett's No. 2 Rea & Green (formerly G. E. Jordan), SW NE Sec. 2-18-4 ..... Cmtd. 12-in. 170 ft; 8-in. 880 ft; and 6-in. at 2,170 ft.
Southern Carbon Co.'s No. 53 fee, SE SE Sec. 23-19-4.. Drlg. 1,740 ft.
United Oil & Natural Gas Products Co. of Louisiana's No. 2 Cole, 660 ft. S, 594 ft. E, C, Sec. 26-20-4 ..... Derrick.
United Oil & Natural Gas Products Co. of Louisiana's No. 5 Guthrie, 6,896 ft. N, 6,022 ft. W, cor. Secs. 49, 26, and 25, Sec. 49-20-5 ..... Derrick.
West Virginia Oil & Gas Co.'s No. 1 West Virginia, NW NW Sec. 8-18-4 ..... Spudded June 24; drlg.

RED RIVER PARISH

J. H. Askew's No. 1 Lockett, NW SW Sec. 32-13-10 .... S.D. 1,630 ft.
Root Refineries, Inc.'s No. 1 Home State & Savings Bank, 330 ft. N, 330 ft. W, C, Sec. 8-13-10 ..... Location.

RICHLAND PARISH

W. C. Feazel's No. 1 Haynes & Moore, 275 ft. S, 1,439 ft. E, NW cor. NE, Sec. 17-16-6 ..... Derrick.
W. C. Feazel's No. 1 McCoy, NW SW Sec. 33-16-6 .... Cmtd. 8-in. 901 ft; drlg. 1,400 ft.
O. E. Hodge's No. 1 W. T. Sartor, SW SW Sec. 16-16-6 ..... Cmtd. 6-in. 2,279 ft.
Hope Engineering Co.'s No. 1 Standard Oil, NE NE Sec. 28-17-6 ..... Drlg. 2,848 ft.
Hope Producing Co.'s No. 1 Eubanks, NW SE Sec. 26-17-6 ..... Drlg. 1,955 ft.
S. R. Humble's No. 1 Binion & Sartor, 660 ft. S, 660 ft. E, NW cor. SW, Sec. 22-17-6 ..... Derrick.
International Gas Products Co.'s No. 1 Beck, 660 ft. N, 660 ft. E, SW cor., Sec. 25-16-6 ..... Derrick.
Magnolia Pet. Co.'s No. 2 Hatch, 180 ft. N, 660 ft. W, SE cor. NE SE, Sec. 2-16-5 ..... Location.
Magnolia Pet. Co.'s No. 3 C. M. Noble, 370 ft. S, 105 ft. W, NE cor. SE NE, Sec. 35-16-5 ..... Rig up.
Magnolia Pet. Co.'s No. 4 C. M. Noble, 400 ft. S, 660 ft. W, NE cor. SE NE, Sec. 35-16-5 ..... Location.
M. L. Meredith's No. 1 Holdness, 1,980 ft. S, 990 ft. W, NE cor., Sec. 15-16-6 ..... Derrick.
Northern Louisiana Natural Gas Co.'s No. 2 Boykin, 1,034 ft. E, 911 ft. N, SW cor. SE, Sec. 20-17-6 ..... Rig up.
Northern Louisiana Natural Gas Co.'s No. 3 Boykin, 733 ft. E, 911 ft. N, SE cor., Sec. 20-17-6 ..... Rig up.
Palmer Corp.'s No. 1 Eubanks, 1,100 ft. N, 350 ft. E, SW cor. SE NW, Sec. 26-17-6 ..... Location.
Palmer Corp.'s No. 1 Hardwick, SW SE Sec. 16-17-6 ... Drlg. shale 2,160 ft.
Palmer Corp.'s No. 1 Jones, NE NW Sec. 22-17-6..... Cmtd. 6-in. 2,300 ft.
Palmer Corp.'s No. 4 Rymes, NW NE Sec. 21-17-6..... Cmtd. 6-in. 2,300 ft.
Palmer Corp.'s No. 1 Whitten, NW NE Sec. 21-17-6..... Cmtd. 6-in. 2,300 ft.
Southern Carbon Co.'s No. 1-B Tegola, SW NE Sec. 5-15-6 ..... Cmtd. 6-in. 2,280 ft.

UNION PARISH

Bahan & Bahan's No. 1 School fee, formerly No. 1 Barr, NW NW Sec. 10-20-3 ..... Drlg shale and boulders 1,800 ft.
Friend & Bahan's No. 1 Barr, formerly No. 1 School fee, 1,110 ft. N, 965 ft. W, SE cor. SE SE, Sec. 16-20-4 .. Location.
E. S. Hall's No. 1 Spencer, SE SE Sec. 36-21-3..... Cmtd. 8-in. 778 ft.
Harrell & Jones' No. 1 Stripling, NE NE Sec. 17-20-4... Cmtd. 6-in. 2,080 ft.
Imperial Oil & Gas Products Co.'s No. 1-A fee, NW NW Sec. 20-20-4 ..... Cmtd. 8-in. 770 ft; drlg. 1,492 ft.
Interstate Natural Gas Co.'s No. 1 Parks, NW NW Sec. 23-20-3 ..... Drlg. 1,900 ft.
Natural Gas Producing Co.'s No. 3 Hale, 1,880 ft. S, 660 ft. W, NE cor., Sec. 11-21-3 ..... Location.
Natural Gas Producing Co.'s No. 1 Hollis, SE SW Sec. 14-21-3 ..... Cmtd. 6-in. 2,109 ft.
Palmer Corp.'s No. 2 Downey, C SW NE, Sec. 21-21-3... Cmtd. 6-in. 2,056 ft.

WEBSTER PARISH—COTTON VALLEY

Magnolia Petroleum Co.'s No. 1 McCook & Hibbler, C SW SW Sec. 22-21-10 ..... Cored red shale 6,111 ft.
Magnolia Petroleum Co.'s No. 5-A Robbins, SE SW Sec. 21-21-10 ..... Drlg. sand rock 3,000 ft.
Ohio Oil Co.'s No. 43 Bodcaw, C NW SW Sec. 24-21-10.. Fish. for roller bit cones; T.D. 3,971 ft.
Ohio Oil Co.'s No. 44 Bodcaw, NW NW Sec. 28-21-10.... Cmtd. 12½-in. 464 ft; drlg. 1,597 ft.
Palmer Corp.'s No. 5 Tillman, NW NW Sec. 27-21-10.... Drlg. lime 3,873 ft.
Standard Oil Co.'s No. 22-B Bodcaw, Sec. 28-21-10..... Drlg. hard sand rock 2,572 ft.

WEBSTER PARISH—SAREPTA AND SHONGALOO

J. W. Clark, trustee's, No. 1 W. B. Roseberry, W half SE SW Sec. 33-23-9 ..... Set. 10-in. 90 ft; drlg. 1,500 ft.
Pat Hudson's No. 1 Slack, SE NE Sec. 1-22-9 ..... S.D. 2,592 ft.
W. M. Kemp et als' No. 1 R. D. Campbell, 250 ft. S, 250 ft. W, NE cor. NW NE, Sec. 11-22-10 ..... Location.
Magnolia Petroleum Co.'s No. 1 Adkins, NE NW Sec. 4-22-9 ..... Waiting on standard rig with 1,000 ft. fluid in hole; T.D. 2,665 ft.
Magnolia Petroleum Co.'s No. 1 Sally Coyle, SE NE Sec. 2-22-11 ..... Drlg. gumbo 1,710 ft.
Magnolia Petroleum Co.'s No. 1 Denman, NW NW Sec. 1-22-11 ..... Standing 1,500 ft. in fluid; waiting orders; T.D. 2,719 ft.
Magnolia Pet. Co.'s No. 1 Roseberry, 330 ft. N, 330 ft. W, SE cor. NW SE, Sec. 19-23-9 ..... Rig up.
Woodmansee et als' No. 1 Boyd, 200 ft. S, 200 ft. E, NW cor. SE SW, Sec. 3-22-11 ..... Derrick.

WINN PARISH—URANIA

Gardner, Harter & Brown's No. 12 Harper, 200 ft. E, 150 ft. S, NW cor. NE NW, Sec. 26-10-1e ..... Location.

ARKANSAS

NEVADA COUNTY

C. F. Steele's No. 1 E. W. Groves, Sec. 21-14-20..... S.D. 2,071 ft.
Wright Oil Co.'s No. 4 Groves, Sec. 13-14-21..... Waiting on standard rig; T.D. 1,140 ft.

OUACHITA COUNTY—MOUNT HOLLY

McDonald Brothers' No. 2-A Wilson, NW SW Sec. 25-15-18 ..... Drill stem test 2,774-79 ft; 20 joints of oil in 7 minutes; cmtd. 6⅝-in. 2,773 ft.

McDonald Brothers' No. 3-B Wilson, SW NW Sec. 25-15-18 ..... Drlg. 2,575 ft.

OUACHITA COUNTY—SMACKOVER

L. H. Hamilton's No. 1 Arnold & Doyle, SE SE Sec. 23-15-16 ..... Set 10-in. 150 ft.

UNION COUNTY—CHAMPAGNOLLE

Bailey & Trimble's No. 1 El Dorado Realty Co., Sec. 7-17-13 ..... Junked at 768 ft; skidding derrick.
Gann and others' No. 1 Doss, Sec. 10-17-15 ..... Tested 5,000,000 ft. gas and spray oil; arranging to deepen; T.D. 2,802 ft.
Gann and others' No. 1 Schmidt, NW NW Sec. 15-17-14.. Derrick.
Oilwell Corp.'s No. 2-E Perdue, NW NW, Sec. 9-17-15...Set 10-in. 152 ft.
Rovenger Oil Corp.'s No. 3-B Perdue, 330 ft. S, 330 ft. W, NE cor. SE NE, Sec. 9-17-15 ..... Rig up.
Rushing and others' No. 1 Lynn, Sec. 7-17-13..... Drlg. 2,990 ft.

UNION COUNTY—EL DORADO

Gulf Refining Co.'s No. 2 Gaddy, Sec. 30-17-14..... Cmtng. back to 2,935 ft; T.D. 3,691 ft.
J. P. Hawkins' No. 1 Goodwin, Sec. 8-17-15..... Claim show gas at 2,195 ft; S.D.
Weisinger and others' No. 7 Goodwin, Sec. 31-17-15..... Cmtd. 6-in. 2,122 ft.

UNION COUNTY—SMACKOVER

E. L. Chapman's No. 1 Purifoy, 585 ft. W, 150 ft. S, NE cor. NW SW, Sec. 2-16-16 ..... Rig up.
Lovett et als' No. 1 Goodwin & Stone, Sec. 3-16-16..... S.D. 2,785 ft.
A. H. Ramage's No. 1-A James, Sec. 6-16-15..... Cmtd. 6⅝-in. 1,960 ft.

EAST TEXAS
HARRISON COUNTY

Eureka Natural Gas Co.'s No. 4 Vaughn, W. R. Anderson Sur. ..... Drlg. hard lime 2,214 ft.
C. H. Lyons et als' No. 6 Furrh, Jas. Short Sur. ..... Cmtd. 4½-in. 2,315 ft.
C. H. Lyons et als' No. 1 Saye, E. M. Jenkins Sur. ..... Drlg. 1,400 ft.
Mason et als' No. 1 Dean, J. W. Crofts Sur. ..... S.D. for orders; T.D. 2,165 ft.

PANOLA COUNTY

Calatex O. & G. Co.'s No. 4 W. C. Agurs, J. Womack Sur.. S.D. for orders; T.D. 2,860 ft.
Eureka Nat. Gas Co.'s No. 1-B Gully, Jas. Matthews Sur.. Drlg. 1,425 ft.
Magnolia Pet. Co.'s No. 4 T. C. Adams, E. Jones Sur. ..Cmtd. 15½-in. 190 ft.
Magnolia Pet. Co.'s No. 3 Ella Barker, B. C. Jordan Sur..Arranging to deepen; T.D. 980 ft.
Magnolia Pet. Co.'s No. 16 Carrie G. Steele, B. C. Jordan Sur. ..... Cmtd. 13⅜-in. 158 ft; drlg. 490 ft.
Natural Gas Prod. Co.'s No. 9 Roquemore, B. C. Jordan Sur. ..... Set 10-in. 43 ft; drlg. 1,487 ft.
Nemours Corp.'s No. 4 Tiller, E. F. Mitcheson Sur. ..... Coring 2,667 ft.
The Texas Co.'s No. 11-A Adams, S. B. Lacy Sur. ..... Bailing to test; T.D. 978 ft.
The Texas Co.'s No. 12-A Adams, S. B. Lacy Sur. ..... Location.
D. Thomason's No. 1-B Mays, Jane Thorp Sur. ..... S.D. for orders; T.D. 1,800 ft.
Paul C. Warren's No. 1 F. M. McNeese, A. Booker Sur. ..Derrick.

ROCKY MOUNTAIN AREA

(Continued from Page 67)

21-14-25, in the Hagerman district, is temporarily abandoned at 1,382 feet, and same firm's No. 1 Jones, C Section 27-14-23, is temporarily abandoned after spudding. The Star Oil Co.'s No. 1 Adams, NE NE NE Section 25-17-17, located 1¾ miles west and half a mile south of No. 1 Wilson, drilled on the Dunken Dome last year by the Texas Production Co., is drilling at 1,835 feet in red shale and anhydrite. It commenced spudding May 4. The Transcontinental Oil Co.'s No. 1 Robbins, SE cor. Section 1-14-28, is drilling at 3,710 feet in anhydrite.

UTAH

Utah had a disappointment this week when the Utah Southern Oil Co.'s No. 1-A J. L. Shaffer, NE Section 36-26-20, on the Cane Creek Dome in Grand County, commenced pulling casing to abandon at a total depth of 4,107 feet. In 1926 the Midwest Refining Co., drilling half a mile to the south on the top of the Cane Creek structure, made a discovery at 2,028 feet, the well making a heavy gas flow and several hundred barrels of oil. The well was continued to 5,000 feet and had other important shows, but most of the drilling was in salt. Utah's biggest drilling campaign followed the next year, but all the wells on the Colorado River structure cut immense beds of salt. Most of the companies pulled out, but late in 1927 the Utah Southern, jointly with the Moab Consolidated Oil Co., started No. 1-A J. L. Shaffer, 450 feet down from the top of the structure, to test the theory that the Colorado River structures were true salt domes and that oil might be found on the flanks. However, it cut the same thick beds of that formation, almost all of the last 1,000 feet being in salt. The horizons at 2,028, 3,600 and 4,800 feet which showed oil in the discovery well were barren in the flank test. It is probable the discovery well could have been made a commercial well if there had been any way to shut off the water and produce the oil, but the salt would crystallize in the pipe and stop the flow of oil and the job was given up. However, it is possible another well will be drilled near the top in the hope that with a better knowledge of conditions these difficulties may be overcome.

The Continental Oil Co.'s deep test in Section 22-43-22, on the Boundary Butte structure in San Juan County, made 13 feet of new hole the past week and is bottomed at 3,252 feet. There appears to have been an increase in the gas which is now around 16,000,000 feet a day. The Phillips Petroleum Co.'s No. 1 Shick, C NE Section 16-27-16, in Wayne County, ran into more water after setting the 6⅝-inch casing at 4,985 feet and has a hole full at a total depth of 5,015 feet. The casing will be underreamed and lowered to make a shutoff. The Western Crude Oil Co.'s No. 1, Section 4-20-23, Cisco Springs district in Grand County, has commenced spudding.

COLORADO

The fate of the Five Square Oil & Gas Co.'s No. 1-A State, SW SW Section 16-4n-69, on the Berthoud structure in Larimer County, on the east flank of the mountain range, which gives promise of opening a new pool in Colorado, probably will be determined within a few days. This well has been idle two weeks at a total depth of 3,730 feet with approximately 1,000 feet of oil in the hole and making considerable gas, due to the bit being lost. The well has cleaned itself several times and made spectacular displays which painted the derrick to the top. The bit was recovered yesterday. There is 160 feet of open hole at the bottom and to avoid danger of caving ground, a liner will be run and drilling resumed with a 4-inch bit. The hole is still in a hard limestone and apparently has not yet entered the Muddy sand, the first of the Dakota series. After cleaning itself, the oil rises about 1,000 feet in the hole over night. In the Midwest Refining Co.'s test on the same structure, drilled in 1925 about half a mile to the north of No. 1-A State, the Muddy sand was cut at 3,750-70 feet and had a show of oil and gas and no water. This was followed by the Dakota at 3,805-18, which was dry, and then the Lakota at 4,020 feet, which carried water. The Midwest test stopped in the top of the Morrison at 4,031 feet. It had 5,000,000 feet of gas at 3,135 feet and a show for 10 bbls. of oil and 3,000,000 feet of gas in the shale above the Muddy.

The only other active operation in Larimer County is the Continental Oil Co.'s No. 1 Fleming, NW SE NW Section 6-9n-68, on the Wellington Dome,

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which is drilling at 3,780 feet. This company's No. 3 Mitchell, NW SE NE Section 6-9n-68, on the Wellington Dome, which was completed on May 1 at 4,410 feet with a show of oil and considerable water, has been on the pump for nearly two months. After pumping for a while it made 30 bbls. of oil. The oil gradually increased until it was making 60 bbls. of oil and 300 bbls. of water three weeks ago. Late reports are that the oil has increased to 125 to 130 bbls. a day and the water decreased to 200 bbls. This well, in some respects, is duplicating the results of No. 1 Plummer, farther to the east, completed in 1926 with an initial production of 3 bbls. of oil and 500 bbls. of water. It was put on the pump and gradually worked up to better than 400 bbls. of pipe line oil a day. It is still on production, but if shut down for repairs for a few days it goes entirely to water. Altogether it has proved to be one of the best producers in the field and has been on production for more than two years.

Florence-Canon City

In the Florence-Canon City district in Fremont County one completion was reported and one new well got under way. The Continental Oil Co.'s No. 3 Dunn, NW SE Section 33-18-70, was dry and abandoned at 2,566 feet, and H. C. Courtney and Oscar Norwood have commenced spudding in their No. 1 Hall, NE NE Section 2-18-69.

In Jefferson County, near Denver, the Ruby Hill Oil & Gas Co.'s No. 1 Braden, SE cor. Section 24-4s-69, is drilling below 3,200 feet and carrying the 6¼-inch on bottom. It was decided not to cement the 6¼-inch at 3,175 feet as reported, but it will be carried for some distance yet. In Arapahoe County, also near Denver, the McDeb Drilling Co.'s No. 1 Fitzsimmons, NE Section 7-4s-66, is drilling below 3,720 feet with the 8¼-inch 6 feet off bottom. It is reported some new money has been put into this operation, which has been under way since 1926, and that faster progress may be expected. Drilling is going ahead 24 hours a day.

In Jackson County, the Producers & Refiners Corp.'s No. 1 Hendershot, SE NE Section 2-6n-81, Pole Mountain area, after cementing the 12½-inch at 1,844 feet to shut off water, drilled to 1,905 feet when it ran into more water, the hole being full. The 10-inch will be run and this string probably will be carried to around 3,000 feet. The Midwest Refining Co.'s No. 21-X Rich, NW Section 9-6n-80, Buffalo, is drilling at 460 feet in sticky brown shale.

In Routt County, the Texas Production Co.'s No. 4 Belle Dennis, NE SE Section 7-6n-86, Tow Creek Dome, started as a test to the Sundance, is coring at 5,121 feet with a 5⅝-inch bit. This test probably is below the Sundance and in the red beds. The Midwest Refining Co.'s No. 10 Barmettlor and Clayton (formerly carried as No. 10 Chura), NW NE NW Section 4-7n-86, on the Chimney Creek Dome north of Tow Creek, a test to the Sundance, is rigging up.

Moffat County

In Moffat County the Midwest Refining Co.'s No. 24-SD Parkinson, NE SE NW Section 22-4n-92, on the Iles Dome, after plugging back to 3,562 feet, is making 20 bbls. of oil and 20 bbls. of water from 28 feet of the Sundance sand. So far it has been impossible to separate the Sundance sand oil from the water. The Texas Production Co.'s No. 36 Lloyd, SE cor. Section 21-4n-92, is swabbing to test after plugging back from 3,862 feet to 3,640 feet and shooting in an effort to make it a producer in the Morrison. These two wells about define the limits of the productive area in the Sundance on the west and southwest flanks of the structure. Thomas McLaughlin and others' No. 1 Williams, SW NW SW Section 2-3n-92, which is testing the fault block south of the Iles Dome, topped what is presumed to be in the Dakota sand at 3,687 feet and encountered water. It is bottomed at 3,707 feet and underreaming the 8¼-inch to set at 3,687 feet. While water in the Dakota is normal at Iles, there was a hope that the faulting might have trapped the oil in that horizon. The Sundance is the objective in the test. The Texas Production Co.'s No. 1 Berlin, SW NE Section 19-12n-100, Bartram Dome, is drilling at 635 feet.

In Rio Blanco County the White Eagle Oil & Refining Co.'s No. 1-A Fordham, Piceance Creek structure, is drilling at 1,170 feet. The bed of maltha reported encountered last week was topped at 785 feet and was 4 feet thick. Since then additional thin strata of this material have been cut. The drillers called it gilsonite, but that material is not attacked by gasoline while the maltha dissolves readily in gasoline and leaves only the particles of sand with which it is mixed. The material burns readily when ignited and upon being dissolved has the appearance of a green crude oil. Evidently it is a residue of oil from which the volatile materials have evaporated.

In Montrose County the Uncompahgre Oil & Gas Co.'s No. 1 Colorado, SW NW Section 27-50n-10, is resuming at 2,031 feet after recovering lost bit and running a new string of casing to replace a bad string. The hole is through the Dakotas and Sundance and is being drilled to the Shinarump conglomerate.

La Plata County, which has reported no activity for some time again is showing signs of life. The Detroit Oil Association's No. 1 Olbert, NW SW Section 9-35-12, which has been idle at 1,823 feet since last fall, is resuming. The 6¼-inch at 1,600 feet is being underreamed and lowered, the extra pipe needed now being on the ground. This well cut the Dakota formation at 1,325-1,545 feet and is headed for the Sundance. The Dakotas carried water. The Royal Producers & Royalty Co.'s No. 1, SE NE Section 27-33-12, Red Mesa, which has been shut down at 650 feet since last fall, will resume July 1.

WYOMING

Stockholders in companies owning leases on government land in Salt Creek feel considerably relieved at the action of Attorney-General Mitchell in informally advising Gerald P. Nye, chairman of the Senate Committee on Public Lands, that he has found no valid grounds for attacking the leases in the Salt Creek Field and does not feel justified in conducting any further investigation. This evidently means the end of the Salt Creek probe as Chairman Nye intended to drop it when Congress re-convenes. Officials of the Salt Creek companies have never felt that anything would come of the investigations, which have been numerous and extending over a period of years, but many stockholders, being less familiar with the details, were uneasy for fear the latest investigation should take some unexpected turn. It will be recalled that the Public Lands Committee, through its investigators, spent some six months in investigating the leases and records which resulted in a report to Thomas Sterling, attorney for the committee, passing favorably upon the leases. After the Sterling report was received, the committee took the testimony of John Barton Payne, who was Secretary of the Interior during the time a large number of the leases were granted, and Assistant Secretary E C. Finney. All of these reports, testimony and records were then turned over to the Department of Justice to be reviewed and a final report rendered. The decision of the Attorney-General closes the matter.

Five completions were reported in Wyoming this week, two being large and important wells. One was No. 22-SD-3, SW Section 26-40-79, on a Wyoming Associated lease in Salt Creek which was completed in the third Sundance sand at 3,008 feet and made 3,247 bbls. initial. The other was the Prairie Oil & Gas Co.'s No. 74-A, Section 11-26-90, on the Little Lost Soldier Dome in Sweetwater County, completed in the Sundance at 1,926 feet with an initial production of 1,100 bbls. This field has been producing from upper horizons for a number of years and runs at present average around 3,100 bbls. a day. However, only five wells have been drilled to the Sundance and the results indicate there remains a large potential production to be developed in that horizon. The other completions were the Midwest Oil Co.'s No. 18-A, SE Section 26-40-79, a 10-bbl. well in the second Wall Creek at 1,535 feet in Salt Creek, the same company's No. 22-SD-3 in the SW Section 35-40-79, a 101-bbl. well at 3,025 feet in the same field, and the California Petroleum Corp.'s No. 7-D, Section 34-27-113, a flowing well at 817 feet in the La Barge Field in Sublet County.

Salt Creek Deep Test

The deep test to be drilled in Salt Creek by the Midwest interests this year will be located in the NW Section 35-40-79. It is intended as a test to the granite, going through the Embar, Tensleep, Amsden and Madison. Tests have been started to these horizons on former occasions but stopped upon encountering production in upper formations. The intentions are to go to the granite in the new well regardless of what is encountered above.

There have been numerous rumors afloat for several weeks to the effect that the Moody-Seagraves interests of Texas have acquired an 80 per cent stock interest in the Cody Petroleum Co., operating in the Oregon Basin Field in Park County. The Cody company has several producing wells in Oregon Basin, the oil being under contract to The Texas Company, which recently completed a refinery at Cody, but which is shut down after it was given a trial run. The Moody-Seagraves interests have never been active in the Rocky Mountain area except about two years ago they started a wildcat in Dolores County, Colorado, which is being completed by the Transcontinental Oil Co.

In Park County, in the Big Horn Basin, the Lenco Petroleum Co.'s No. 1 Lyle, SE cor. Section 24-51-101, on the Oregon Basin structure, is being abandoned at a total depth of 4,486 feet, 234 feet below the top of the Embar. The rig, a rotary outfit, is being moved to the Morris permit in the SW NW NE Section 29-51-100, where a new operation is to be started. Charles E. Orchard's No. 5 Rue, NW SW Section 28-51-100, is cementing the 6⅝-inch casing on top of the Embar at 3,585 feet preliminary to drilling in. The Producers & Refiners Corp.'s No. 1, Section 29-52-100, is drilling at 740 feet in black shale, and its No. 1 Owen, same section, is drilling at 1,140 feet in shale. On the Frannie Dome the Midwest Refining Co.'s No. 1 Rosenberg, NE cor. Section 26-58-98, is moving in for an offset on the south to No. 36 Kirk-Peters, which recently came in as a producer. The Midwest's No. 36 Rosenberg, SE cor. NW Section 25-58-98, is drilling at 2,832 feet in red shale. On the south Frannie Dome, or Sage Creek structure, the Producers & Refiners' No. 1 Rand, SE NW Section 7-57-97, had a show of oil with water and is running a packer to shut off the water at 2,680 feet. The same company's No. 1 Hill, NE SE Section 7-57-97, is shut down at 597 feet waiting for the cement to harden. The 15½-inch was set at that depth. The California Exploration Co.'s No. 2 Pitchfork, NW NE Section 14-48-102, is drilling in a 20-inch hole at 1,130 feet.

The Midwest Refining Co. is moving in material for a test on the Diamond, or Cooper Cove Dome in southern Albany County. The location is No. 17, SE NW SE Section 6-20-77. A well was drilled on this structure several years ago by the Utah Oil Refining Co.

Big Horn County

In Big Horn County, the Producers & Refiners' No. 3, NW NW Section 24-56-98, on the Garland Dome, joint with the Kinney-Coastal Oil Co., is drilling at 3,220 feet in the Sundance formation. In Hot Springs County, the Texas Production Co.'s No. 1, NW SW Section 23-45-100, Skelton Dome, is drilling at 2,660 feet below the Wall Creek series.

In Weston County, the Wyoming Drilling Syndicate's No. 1, NE cor. Section 15-44-64, Howard Dome, has succeeded in getting out 600 feet of bad casing and has rerun 4,000 feet of the 6¼-inch. Total depth is 4,350 feet, and the bottom is believed to be just off the second Wall Creek. Operation was shut down last winter when the pipe collapsed and when work was resumed last month it was found that 2,000 feet of green oil was standing in the hole.

In Fremont County, the Producers & Refiners' No. 2, Section 9-32-95, Sand Draw, is bottomed at 3,762 feet and trying to work pipe. Same company's No. 2, SE NW Section 33-34-92, Muskrat Dome, is drilling at 360 feet in shale. In Lincoln County, the Midwest Refining Co.'s No. 1 Waterfall, SE SW Section 35-22-115, is drilling at 3,455 feet in gray lime and shale, and its No. 1 Little Grays Rivers, SE Section 25-37-117, is drilling at 906 feet in hard gray shale.

In Sublet County, the California Co.'s No. 1 Wyss, NE SW Section 12-32-115, South Cottonwood, is bottomed at 2,130 feet and underreaming, and same company's No. 1 Union Pacific, NE NW Section 7-17-116, Muddy Creek Dome, Uinta County, is fishing for bit at a total depth of 3,182 feet.

In Carbon County, the Producers & Refiners' No. 1, NE NE Section 15-25-89, Sherrard Dome, is drilling at 3,296 feet in shale, and its No. 7, Section 7-26-89, Wertz Dome, is in sand at 3,638 feet.

IDAHO

The California Co.'s No. 1 Sorensen, NW SW Section 33-3n-41, Meadow Creek structure, Bonneville County, Idaho, is bottomed at 3,000 feet and waiting for cement to set. The 10-inch was set at this depth to make a water shut-off. Norton Brothers' No. 1, Section 19-10s-37, Hancock County, is bottomed at 2,200 feet and waiting for cement to harden. Casing was set at this depth to shut off water sand just above the Devonian system. The Grand Teton Oil Co.'s No. 1 Blevins, SW Section 33-5n-44, Teton County, joint with the Standard Exploration Co., is bottomed at 515 feet and preparing to run the 15½-inch.

MONTANA

The Pondera Field had a fire the past week when four tanks forming a battery near the Ballup camp and owned by the Midwest Refining Co. caught from some unknown cause and were destroyed. There was about 1,250 bbls. of crude in the tanks.

Pondera Field completed two small producers the past week, the Texas-Pacific Co. has a small pumper of about 10 bbls. on Section 15-27-4 at 2,014 feet. The Ohio Oil Co. drilled in a 15-bbl. producer on the Hirschberg lease on Section 15-27-4 and this well will make about 12 bbls. natural. Both will be shot.

In the Bannatyne Field the Fifty-Six Petroleum Co. drilled in its No. 4 on the Speer lease and the Texas-Pacific drilled in its No. 1 adjoining; each will make around 10 bbls. The Producers Independent Oil Co.'s No. 2 on the Skoog lease is a 12-bbl. well.

The Texas-Pacific is placing tankage for a field test in Bannatyne. This will decide whether the company will lay a pipe line to bring the present production to the railroad or leave the field as it is for more development. The amount required to warrant a pipe line is said to be 1,000 bbls. per day and it is thought by operators who know the field that this amount cannot be had at this time.

Sunburst Field

The Texas-Pacific has also announced that a well will be drilled to the granite to make a test of all formations in that area. This will mean a well about a mile deep and the location is in the center of a high producing area in the Sunburst Field. Below the Madison lime lie the Devonian shales that are thought to contain oil in northern Montana, but so far have only shown a small seepage of petroleum where the formation has been examined.

In the Sunburst Field, the Hannah Porter Oil Co. on Section 25-34-1 will plug back to the Sunburst sand around 1,300 feet and save the well as a gasser there. It found water in the contact. The Sweeny Maughs well on Section 28-35-1 reached the Elis sand and will make a 10-bbl. pumper. The Deloraine Oil Co.'s well on the same section found some oil in a stray sand about 1,370 feet and was shot. It will make a pumper of about 10 bbls. The Big West Oil Co. has a 15-bbl.

(Continued on Page 168)

Practical Suggestions in Refining

By W. T. Ziegenhain

Refiners Watching Developments in Oklahoma City Pool

Refiners who are witnessing a dwindling supply of light colored crude for the manufacture of cylinder stocks and bright stocks have been giving more attention to the new Oklahoma City Pool since the production has been increased to 15,000 bbls. daily and promises to be greatly increased as the 25 or more wells are completed in the next 60 days. The feature of the crude is its light color from a refining standpoint for the gasoline yield is not exceptionally high. The crude averages 37.5 to 38 gravity and yields from 27 to 29 per cent gasoline of U. S. Motor specifications approximately 8 per cent kerosene and from 18 to 20 per cent steam refined stock of 600 fire test.

Compared to Seminole crude from a refining standpoint it is less desirable as a revenue producer if it is run to fuel as would be done if blended with other crudes in a pipe line. It has a lower gasoline yield by about 10 per cent of the crude, and yields about 2 per cent more kerosene. Seminole crude does not yield a good grade of stock without treating while this does. There is approximately 50 per cent more wax in the Oklahoma City crude and for this reason, it is more difficult to secure the same pour point on the lub cuts and the cylinder stock than on the general run of Mid-Continent crudes. Compared to Burbank crude, the color of the stock made from the Oklahoma City crude is generally lighter, the viscosity is higher and the pour point is higher when running to the same flash and fire.

At present there are four producing companies in the field, the Mid-Kansas Oil & Gas Co., which has one well producing approximately 5,600 bbls. daily, the Coline Oil Co. has one well making about 4,200 bbls., the Sinclair Oil & Gas Co. two wells producing about 4,000 bbls. and the Indian Territory Illuminating Oil Co. which has one well and producing about 2,200 bbls. daily. The great bulk of the leases are held by the Indian Ter-

(Continued on Page 168)

REFINERY EMPLOYMENT SHOWS LARGE INCREASE

The number of men employed and the payroll in the refineries of the United States showed a substantial increase in April compared with the previous months and compared with April a year ago. The increase in the number on the payroll during April compared with March was 2.5 per cent and the increase in the amount increased 4.6 per cent. Making these comparisons with April of last year as a basis, this year's increase in the number of men is shown as 12.5 per cent and the increase in the payroll is also 12.5 per cent. The above figures are based on the monthly survey of employment in manufacturing industries by the United States Department of Labor and the chart included here shows the trend in employment over the last 14 months.

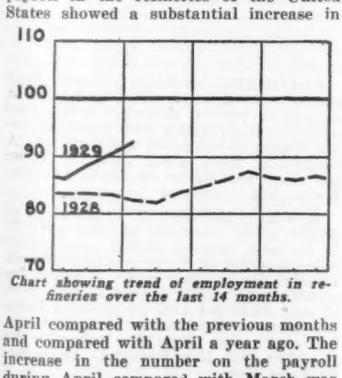

Chart showing trend of employment in refineries over the last 14 months.

SUGGEST METHOD IN DETERMINING REVENUE FROM CRACKING OPERATION

Those refiners who do not have cracking units are often desirous of determining what revenue their plant would bring if a unit of one kind or another were installed. On first thought, the best way to arrive at such a figure would be to charge out against the unit the market value of the gas oil or fuel oil run together with an estimated cost of operation, based on a per barrel of raw oil charged and in turn the unit would be credited with the guaranteed yields. The difference would be termed as revenue from cracking to apply against the indirect charges, depreciation, overhead, etc.

But this method does not give an accurate figure and except for arriving at a departmental earnings periodically or for a rough estimate of whether it did or did not pay to crack, it is not as desirable a method as the one in which the expenses, and yields of the entire plant are included, first as the plant is operating and then the revenue of the plant after the cracking units are added. As a matter of explanation regarding departmental earnings referred to, it is common practice for refiners to set up cost records and arrive at an earnings monthly for various departments in the plant. In the case calculating the monthly earnings from the cracking operation it is often assumed that the gas oil and fuel oil charging stock are purchased from the skimming plant and is charged out at the general market price as an average of trade journal prices for the period. Similarly, the published prices on gasoline, fuel oil, coke, etc., are taken in arriving at the revenue. With the expenses such as labor, fuel, etc., for the cracking department known it is an easy matter to set up a month-to-month record and is of great value in making comparisons while studying the relative efficiency of different units, operators, etc.

Objections to Method

The above method would require too many adjustment factors if it were to include all of the expenses of cracking such as the correct amount of the superintendent's time to be charged against cracking, the equitable part of the boiler house expense, the loading rack, laboratory, etc. In addition, this method involves the use of the general market price for the charging stock and this general price is not always an equitable price to apply on your particular gas oil or fuel oil. In the preferred method referred to, no market price on the charging stock is used and the matter of arriving at an equitable breakup of the expenses of the boiler house, loading rack, etc., is eliminated.

The general form for arriving at the revenue from cracking may be made up as follows:

Revenue per Barrel of Crude Run—Skimming 5,000 Bbls. Seminole Crude Daily.

Yield—	Price	Revenue
38% Gasoline (U.S.M.)	$.09	$1.430
7% Kerosene	.06	.176
20% Gas oil	.025	.210
32% Fuel oil	.50*	.160
3% Loss		
Gross revenue		$1.976

*Per barrel.

Expenses:	
Cost of crude in field	$1.55
Pipe line charge	.25
Plant operating expense, including all labor, fuel, electricity, water, chemicals, etc.	.10
Plant maintenance, including labor and materials	.01
Cost of using 6,000 bbls. natural gasoline per month	.01
Total expense	$1.920
Refinery margin per barrel of crude skimmed	$ .056

Revenue per Barrel of Crude Run—Skimming 5,000 Bbls. of Seminole Crude Daily and Cracking the Bottoms in Two Dubbs 1,500-BBl. Units in Nonresidue Operation.

Yield—	Price	Revenue
72% Gasoline (U.S.M.)	$.09	$2.720
7% Kerosene	.06	.176
6% Furnace oil	.03	.075
15 lbs. Coke	3.00*	.023
15% Loss, gas and coke		
Gross revenue		$2.994

*Per ton.

Expenses:	
Cost of crude in field	$1.550
Pipe line charge	.250
Plant operating expense, including all operating labor, fuel, electricity, water, chemicals, etc.	.350
Royalty on cracking operation	.078
Plant maintenance, including labor and materials	.030
Cost of using 8,000 bbls. natural gasoline per month	.013
Total expense	$2.271
Refinery margin per barrel when cracking	$ .523
Difference in the refinery margin per barrel	$ .467
Increased plant revenue per month due to cracking	$70.150

The above forms are summaries and of course, there would be considerable detail in arriving at the respective operating costs. Where the refiner does not have a cracking unit and his figures are to represent estimated earnings, it is necessary to make a close analysis of just how the various departments will be affected in the plant after the unit is added. There will be an increased consumption of steam and electricity for pumping and distilling. The amount of chemicals used will be increased. Additional labor is necessary to operate the unit itself and possibly another man will be needed in the laboratory, on the loading rack, or in the plant office. Each plant has its own methods of organizing its personnel but oftentimes it is possible to make advantageous shifts which may add work on the regular jobs with no increase in the personnel.

Fuel Consumption

Next to labor, the question of fuel must be studied. In all cases, the manufacturer or the licensor of the cracking unit is able to accurately estimate the fuel consumption to carry on the work outlined. In this method of determining the revenue from cracking, there is no yield value nor direct credit taken for the amount of permanent gases made during cracking. Credit has been given this factor, however, in the fuel expense. If the cracking plant is already operating, the cost of burning fuel oil or the amount of purchased gas has been decreased by the amount of the permanent gases recovered from the plant. If the analysis is an estimate of what will be experienced, the licensee can accurately estimate the volume of gases that will be made, based on the kind of charging stock to be run, the intensity of cracking and whether the gas is run through a gasoline recovery system, in which case the gas would have a lower B.t.u. value.

Similarly, the gasoline recovery system, if the plant is so equipped, will have its load materially increased. The increased volume of gasoline recovered will show up in the gasoline yield and this method of handling this credit simplifies the cost accounting and eliminates the question of the proper price to be assumed for the light gasoline recovered.

Natural Gasoline

The cost of using natural gasoline is an operating cost which must be considered, although under certain conditions, this so-called cost becomes a source of revenue. This occurs when the delivered price on the natural gasoline is less than the market price at the refinery on the gasoline in which it is blended. Under ordinary conditions of the market this is not the case, however. The cost of using the natural gasoline involves knowing the distillation range and the gravity of the gasoline manufactured in the skimming operation and then the composite of the cracked and straightrun gasoline. Sometimes the cracked gasoline is sufficiently volatile and the gasoline recovery system so efficient that less natural gasoline is needed when cracking than when skimming even though there is more refinery gasoline made. If the refiner is obligated to blend to a certain gravity, it is an easy matter to determine the natural gasoline requirements after knowing the gravity of the gasoline produced. If the problem requires an estimate of the gravity of the cracked gasoline to be made, the licensor is generally able to make a close estimate from the data available in the balance of the problem.

Royalty is often excluded from the re-

(Continued on Page 168)

Recent Patents

VACUUM DISTILLATION

1,717,002. Process and Apparatus for the Vacuum Distillation of Hydrocarbons. John C. Black, Destrehan, La. Filed February 2, 1924. Serial No. 690,206. 2 Claims. (Cl. 196—77.)

1. A process for the production under reduced pressure of a reduced lubricating oil stock, and the separation of an intermediate distillate and lower boiling hydrocarbons and water, from a mixture of the same, wherein the reducing and distilling operation is effected under a partial vacuum greater than 24 inches of mercury, which comprises circulating the mixture of hydrocarbons through heating tubes and an evaporator, heating a portion of said hydrocarbons to a vaporizing temperature and introducing steam therein, maintaining a reduced pressure on the evaporator sufficient to prevent decomposing or cracking of the hydrocarbons, vaporizing the lower boiling hydrocarbons and passing the same together with the introduced steam into a fractionating tower, under reduced pressure, contacting said hydrocarbon vapors and steam in counter-current flow with a previously condensed portion of said intermediate distillate at a temperature sufficient to condense and extract from said mixture of hydrocarbon vapors and steam, substantially all the intermediate distillate free from water and substantially free from low boiling hydrocarbons, and separately condensing and collecting said lower boiling hydrocarbons and water.

ADD OXYGEN-CONTAINING GAS

1,716,974. Art of Refining Hydrocarbon Oil. Elmer H. Payne, Wood River, Ill., assignor to Standard Oil Co., Whiting, Ind., a corporation of Indiana. Filed June 17, 1925. Serial No. 37,823. 2 Claims. (Cl. 196—147.)

1. An apparatus for the refining of hydrocarbon oils, a chamber, means for supporting within said chamber a body of filtering material, means for supplying oil to be refined to said filtering chamber and causing it to travel through said body of filtering material, means for withdrawing oil products from said filtering chamber, means for locally heating the filtering material in said chamber, means for supplying an oxygen-containing gas in proximity to the point of local heating thereof, the supply of such gas causing combustion of organic matter in the filtering material in a zone which travels through the body of filtering material, closed conduits embedded within the body of filtering material, and means for passing an attemperating fluid through said conduits.

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

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MAIL your advertisement now. It will be published next week. Cash with order.

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REAL BARGAINS IN USED EQUIPMENT
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2—30 Ton per hour Komareck Units complete with mixers and motors.
1—15 Ton per hour Komareck Unit.
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STEEL TANKS

4—19' dia. by 12'6" high, 25,000 gallon.
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4—22,000 gallon Parkersburg, bolted.
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A large stock of smaller sizes in both pressure and open tanks. Write for list.

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1—Benzol Stripping Column.
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Large stock steam pumps, simplex and duplex, for tank and general service. Write for list.

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Large stock standard and extra heavy cast iron valves and fittings. Write for list.

NASHVILLE INDUSTRIAL CORPORATION
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READY FOR IMMEDIATE SHIPMENT
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50 MILES 4" O.D. PLAIN END PIPE
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All sizes in casing and line pipe from 2" to 15½" inclusive.

PRODUCERS PIPE & SUPPLY COMPANY
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Tulsa, Oklahoma

FOR SALE

20,000 Feet of 18" O. D., ⅜" wall second hand pipe, random lengths, plain ends, in good condition.

The Sawhill Manufacturing Company, Oliver Bldg., Pittsburgh, Penna.

FOR SALE or trade, one Star drilling machine No. 22, with a four-cylinder Buick gasoline engine on same. Machine is like new and has a heavy full string of drilling tools. Everything like new. Address G. H. Dempsey, Stop 22½ Lorain Rd., North Olmsted, Ohio.

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1,000 tons tank steel plates consisting principally of ⅞" and ¼" sheets 62"× 14' to 16'.

Located at Coffeyville, Kansas, and Vinita, Oklahoma.

For prices and delivery wire or phone

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DRILLING RIGS, Truck & Roadster

Fort Worth spudder fully equipped, sale or trade on large size same make. One ton truck and roadster trade for larger size truck. Also 25 Star, good, sale or trade. M. B. Jenson, 145 N. Kaw, Bartlesville, Okla. Phone 1545-J.

200-165-150-125 and 110 HP. Bessemer Gas Engines.
240 KW., 2,300 Volt, A.C. Generator.
180 KW., 2,300 Volt, A.C. Generator.
20,000 ft. of A No. 1 3-in. line pipe.
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Box 398, Butler, Pa.

FOR SALE—EQUIPMENT

BUY OR RENT USED PIPE
and Save the Difference

15,000'— 5⅝" Casing.
10,000'— 6⅝" Casing.
5,000'— 8¼" Casing.
5,000'—10" Casing.
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1,000'—15½" Casing.

We will rent this casing or any other pipe which you may need. Let us finance your operations by carrying your pipe and casing investment for you.

KEYSTONE PIPE & SUPPLY CO.,
Holmes Building
Fort Worth, Tex.

FOR SALE complete set Standard Tools. 12x12 AJAX engine (NEW). 2,000 ft., 6⅝-inch, 24-pound. 700 ft. 10-inch, 52-pound. 1,500 ft., 2-inch pipe. F. E. Turner, 217½ Broadway, Muskogee, Okla.

EQUIPMENT WANTED

WANTED DRILLING OUTFIT

Complete with tools, good condition, capable going 2,750 ft. Also 750 ft. 8¼ and 2,750 ft. 6⅝ serviceable casing for North Michigan deal. Pay part cash and trade acreage or stock in company. For attention give age, itemized list and cash price. Mr. Ballew, 1201—162 North State St., Chicago.

WANTED—No. 30 Star Drilling Machine with complete set of tools. F. J. Ravlin, Route 3, Miami, Fla.

BUSINESS OPPORTUNITIES

STOCKHOLDERS LISTS

Have 1,600,000 Stockholders in 1,200 companies, oil, mining, and industrial. Ask for Price List showing name, number in list, and price.

A. F. Williams
166 West Adams St.
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HAVE WESTERN Kansas block with very promising structure. Have casing and rig worth $40,000. Have had experience in drilling, leasing and have sold over $50,000 of acreage in one block to major companies. Can absolutely guarantee return of money. Need $25,000 to $50,000. For particulars write Box C-977. The Oil and Gas Journal, Tulsa,

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SOUTHWEST Texas Oil—For information send $1 for year's subscription to Petroleum Reporter, 1616 Milam Building, San Antonio, Texas.

TO Responsible Refineries and Producing Companies.

A very well known and substantial Public company in England operating in the Gasoline distribution business with large connection and facilities throughout England, desire to come to an arrangement with responsible American house for their supplies and to act as European Agents for other oils. Those interested please communicate with Box 9232, Gilbert Advertising, Ltd., 14-18, Holborn, E. C. I., London, England.

ATTENTION
DRILLERS—CONTRACTORS

Ten thousand acres leases. Geophysical survey, showing oil and gas in paying quantities. Attractive terms for development on share basis. E. T. Camp, Gadsden, Ala.

NEED $8,000 to drill block in West Texas. Shallow production there now. Best geology surface and subsurface by successful men. Box D-2, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Brokers-salesmen to sell our Issue Money raised for expansion construction work on refinery. Apply quick. Victory Petroleum Co., Big Spring, Tex.

PATENT ATTORNEYS

REGISTERED PATENT ATTORNEYS
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Before disclosing your invention to anyone, send for blank form,
Evidence of Conception.
Bulletin "How to Establish Your Rights" and complete information free.

LANCASTER & ALLWINE,
240 Ouray Bldg., Washington, D. C.

HELP WANTED

WANTED—ENGINEER experienced in refinery design by Oklahoma oil company. State age, experience and salary expected. Address Box C-981, The Oil and Gas Journal, Tulsa, Okla.

WANTED

Sales representatives or sales organization familiar with tool steel to represent manufacturer of product offering large potential market for oil field application. Address Box C-992, The Oil and Gas Journal, Tulsa, Okla.

ENGINEERS AND SUPTS.

Thoroughly experienced men wanted for oil refinery design, construction, operation and maintenance. Salaries from $225 to $700. Give age, education, complete record and when available. Address Technical Division.

CO-OPERATIVE EMPLOYMENT SERVICE
300 Board of Trade Bldg.,
Kansas City, Missouri.

SALES ENGINEER wanted with established offices to represent a manufacturer of internal combustion engines. Give full particulars and territory capable of handling. Buffalo Gasolene Motor Company, Buffalo, N. Y.

WANTED: Graduate Civil or Mechanical Engineer experienced in oil refinery layout and design. State age, experience and salary desired in first letter. Address Box C-982, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Two designing draftsmen with general oil refinery experience in piping concrete and structural steel. Give detailed experience in writing with date you can report. Shell Petroleum Corporation, Sellers, Louisiana.

GEOLOGISTS

OIL LOCATED before drilling. Geophysical method. Toggodometer Instrument; take pay in oil. No oil, no pay. Except traveling and testing expenses. 95 per cent accuracy. O. P. Coffin, Caddo, Tex.

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CREDIT MANAGER—13 years' experience in tank car, bulk and service station credits with two major oil companies. Available now. Best of references. Box C-976, The Oil and Gas Journal, Tulsa, Okla.

SUB-SURFACE GEOLOGIST, graduate, married, two years' experience in Venezuela, desires employment foreign or domestic. Address Box C-990, The Oil and Gas Journal, Tulsa, Okla.

MARRIED man wants work as pumper, nine years experience, pumping and steaming oil. Address B. E. McCoy, 616 North Chestnut St., Iola, Kansas.

EXPERIENCED Compounder lubricants, similar Galena Oils, for railroad trade. Address Box C-974, The Oil and Gas Journal, Tulsa, Okla.

CIVIL ENGINEER

Twelve years' experience Mid-Continent fields. Thoroughly familiar with oil field engineering and construction. Pipe line and production. Available at once; references furnished. Box C-924, The Oil and Gas Journal, Tulsa, Okla.

SALESMAN: Calling on oil field buyers both in city and field for the last nine years would like to make a change. City work preferred. Can furnish own car. Box D-1, The Oil and Gas Journal, Tulsa, Okla.

INCORPORATIONS

DELAWARE incorporator. Charters, fees small, forms. Charles G. Guyer, 901 Market St., Wilmington, Del.

CHARTERS—Delaware best, quickest, cheapest, most liberal. Free forms. Colonial Charter Co., Wilmington, Del.

ADDRESSES WANTED

J. C. JACKSON, dear boy, where can I reach you with a letter? Angela, P. O. Box 1545, Fort Worth, Texas.

ANYONE knowing the whereabouts of Bill Hart, cable tool driller, will be doing him a favor if they will notify Box 661, Tulsa, Okla.

RANCHES AND FARM LANDS

SAN ANTONIO, TEXAS
FARM BARGAIN

1,600-acre bargain, 9 miles from the heart City, 1,200 acres in cultivation; 3 sets of improvements; main street of City being extended through this property; good subdivision proposition. Can be bought for less than $160 per acre. Wm. Beuhler, 618 Gunter Bldg., San Antonio, Tex.

FOR SALE: 1,360 ACRES in fee. Abundance of living water, all good pasture land, the big portion wheat land, some shallow water alfalfa land. Located in immediate vicinity of drilling blocks recently taken by four of the major drilling companies. An investment that will double in value from an agricultural standpoint and a real oil play thrown in. $7.50 net cash. Wm. T. Holland & Co., Eads, Colorado.

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THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

COLORADO mountain resort with ranch included. Surrounded by lakes that abound in various mountain trout. Fine and healthful climate, pure mountain water. Owing to advanced age must sell. A bargain if taken about July 15. Write for more particulars to Math Lackner, Kremmling, Colorado.

A WELL IMPROVED cattle ranch of 21,500 acres, alternate sections with T. & P. land, making 43,000 acres under fence. Located in North-central Hudspeth County, Texas. This ranch is leased for grazing only and is subject to sale price of only $3.75 per acre on patented basis. The Natural Gas line and the new Carlsbad road passes along this land, also the Paso-Tex Pipe line. Robert L. Dorbandt, El Paso, Texas.

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FOR SALE—420-acre mountain ranch home. Days cool, nights cold, trout and game at your door. Well improved, cuts 800 tons hay, oil possibilities good. An ideal place to spend the summer and a profitable investment. $30,000. C. W. Sweitzer, Eads, Colo.

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

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LEASES—PRODUCTION

LEA COUNTY, New Mexico's biggest Oil Play. 40 acre lease $50.00. Chaves County, 40 acres $25.00. Monarch Inv. Co., Roswell, N. M.

SEND NOW for list of attractive oil and gas leases and royalties in 17 interesting Texas counties at $1 per acre and up. Also want agents anywhere in U. S. on liberal commission. National Land Co., Box 73, San Antonio, Tex.

WANTED

From forty (40) to eighty (80) acres in proven territory for immediate development. Worthen Petroleum Co., 305 Oklahoma Sav. & Loan Bldg., Oklahoma City, Okla. Telephone 2-3666.

SHALE GAS PROPERTY FOR SALE

560 acres and 3 producing wells. Steady pipe line market. Will sell an interest for further development or will sell entire property. Box 52. Chanute, Kans.

A REAL OIL GAMBLE

1,000 ACRES leases virgin territory. In line 5 miles each way to 2 big gas fields. An oil seepage on lease of long years standing. When agitated does not break up. Located about 6 miles from Ashland, Ohio. Will sell part or all of leases. Inquire of James Tallon, Cottage St., Ashland, Ohio.

WANTED TO BUY 200 to 500 barrels daily production, with proven locations to drill. Deal only with principals. No brokers.

MID-TEXAS PETROLEUM CO.
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FOR SALE—SW ¼ sec. 1, tws. 20, R. 5 W. near Douglas, Garfield Co., Okla. Good improvements, also nearly new 4 room modern house, 702 N. Main, Tonkawa, Kay Co., Okla. Mail all sealed bids to Cora Apple, Douglas, Okla.

7,000 ACRES for lease in Washington County. Lease located 3 miles South Sun Oil Field. About 18 miles Northwest of Bellville Oil Field. About 10 miles West of Wesley Oil Field, between 3 big oil fields. This almost proven oil territory. Many derricks up and drilling all over the county. A wonderful opportunity. M. E. Fisher, Brenham, Texas.

LOOK—640 acres of land in eastern Wyoming with prospect for oil. For sale or lease. Ernest Habegger, California, Mo.

FEE OWNER will sell lease NW Section 7-12-2e on Lincoln-Oklahoma line on topographical high. Major companies have adjoining leases. Also lease NW Section 19-11-3w, about 5 miles of big Oklahoma City well. No encumbrances. G. A. Minnich, Carroll, Iowa.

FOR SALE—80 acres, Cotton Co., making 16 barrels settled; also Chevrolet car, Ford tractor with winch, superior gas engine, casing, tubing and other material. Box C-993, The Oil and Gas Journal, Tulsa, Okla.

FOR LEASE, Oil and Gas acreage in Section 16-17-19 and 20-12-11, also in Sec. 21-12-9, Okfuskee Co., Okla. Address Box C-961, The Oil and Gas Journal, Tulsa, Okla.

HAVE YOU read of the big wells in Oklahoma County? A word to the wise, buy land and royalty ahead of the drill. Close to location. Geo. W. Seckman, Edmond, Okla.

CONSIDERING bids oil leases all or part of 1 and 12-17-26, Ness Co. Continental drilling near. Survey Map. Owner, E. S. Stucker, Chanute, Kans.

FOR SALE, lease on thirteen thousand and part royalty on sixty-six thousand acres, Culberson Co. Now drilling on three sides. W. H. Carver, Uvalde, Texas.

IF INTERESTED in the Michigan Oil Fields, write for free bulletin, or other information. Michigan Oil & Mining News, 115 Ionia St., Grand Rapids, Mich.

WHOLESALE ONLY

Can supply long term oil and gas leases in many West and Southwest Texas counties at very attractive prices. List gladly furnished reputable dealers. Am wholesale dealer in oil and gas leases. Address Tom Hughes, P. O. Box 458, Dallas, Tex.

LEASES—PRODUCTION

GETTING READY to drill on proven lease, Bixby Field, Oklahoma. Want a few parties with $500 or more to invest to join me. This lease selected on knowledge gained through actual operations this locality. Address Happy Sparks, 201 Hotel Brady, Tulsa, Okla.

LANDS, LEASES and ROYALTY BARGAINS in Ector, Winkler, Reeves, Pecos and other western counties. C. H. C. Anderson, Linz Bldg., Dallas, Tex.

BROKERS—Price of crude going up and so is price of oil leases. Have one hundred thousand acres of oil leases and royalties to select from in fifteen differnet counties in Texas at cheap prices. Buy now before they advance. Write me your wants. Scout, P. O. Box 200, San Antonio, Texas.

WANT TO SELL one-half interest in five blocks of acreage in Wichita Falls district with a well completed on each block. Good subsurface geology for total consideration $25,000.00.

H. B. DUDLEY
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OWN IN FEE with all oil rights 376,000 acres in Mexico, 50 miles north of Torreon and southeast of El Paso, Texas. Sacrifice $2.00 per acre, $50,000 cash, $50,000 six months and balance spread over a period of 5 years. 90% level land. Excellent oil possibilities. Have log of water well drilled to 440 feet struck oil. Have complete geological report by Jose G. Aguilera, founder Geologists Institute of Mexico City. Mexican-American Land & Colonization Company, 3212 Wilshire Boulevard, Los Angeles, California. Drexel 0292.

FOR SALE. Close in acreage to well. To start by July 26. Structural high. Rice County, Kansas, also checkerboarded acreage. G. W. Moore, Independence, Kans.

FOR SALE—5 acres close in oil land gas lease south part sec. 12, bl. B-72, Winkler County, Texas, $750 an acre. Box C-991, The Oil and Gas Journal, Tulsa, Okla.

S.E. OKLAHOMA absolute title land bargains, 40 to 1,000-acre tracts of coal in new oil and gas field; $5 an acre up. John Cavanagh, McAlester, Okla.

NEW MEXICO OIL LEASES

I have 4,000 acres in Quay County in tracts of 40 acres or up at 33 cents per acre. Rental 5 cents per acre. For maps and detail write Frank Strickland, Sapulpa, Okla.

PENNSYLVANIA SETTLED PRODUCTION

Oil and gas properties, various sizes showing good present investment, with large opportunities of development. Any one interested in Penna. crude production can profit through my investigations. Several good offerings.

F. E. Redding, Warren, Pa.

FINLAY DOME district, Hudspeth County, Texas, looks good. Map and lease prices, $1.00 cash.

G. D. BATEN,
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LANDS, Leases, Royalties and drilling blocks in proven or unproven territories, Winkler, Pecos, Ward, Loving, Reeves, Culberson and adjoining Counties. Wire or write.

H. F. Anthony, Anthony Bldg.,
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GIVEN FREE well located leases in Linn or Coffey Counties, Kansas, for the drilling of a well, shallow drilling; three sands; good markets for the oil and gas. H. W. Mitchell, Parker, Kans.

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LEASES and royalties, Caddo, Blaine and adjoining counties. Write for complete list. A. E. Baldwin, Anadarko, Okla.

LEASES—PRODUCTION

GRAY CO., TEXAS, lease in proven territory, SE 20 acres of N½ of Sec. 1, B.&B. Apply to E. Key, Marshall, Tex.

NEW MEXICO LEASES

In Roosevelt County surrounded by various companies all 10-year leases and 50c rental. 9 years yet to run and rental paid until July, 1930.

80-acre leases $150.00
160-acre leases $250.00

GLENN MYERS, SAN ANGELO, TEX.

LEASES and royalties, Caddo, Blaine and adjoining counties. Write for complete list. A. E. Baldwin, Anadarko, Okla.

SETTLED PRODUCTION

46 Barrels net with prospects of materially increasing.

WAGONER COUNTY, OKLAHOMA.

340 acres with more locations in same sand now producing.

Deeper sand possibilities.

Gasoline plant making 450 gallons daily, run in connection with production.

Further information furnished upon request.

NO BROKERS
Address
Box C-997, The Oil and Gas Journal,
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7,320 acres solid block at $3.50 per acre on patented basis. Located in northeastern Hudspeth County, Texas. Perfect title. Robert L. Dorbandt, El Paso, Texas.

2,840 ACRES blocked for well to commence on or before Nov. 10, 1929; located about 10 miles from Pampa, Gray County, Texas. $1.00 acre cash bonus and 80 acres retained for protection. Good geology, guaranteed title, abstract furnished for examination. H. Meers, Schneider Hotel, Pampa, Texas.

WINKLER—PECOS COUNTIES
Leases and Royalties
W. S. PATTERSON,
Pecos, Texas.

WORLD'S BIGGEST Oil Companies playing Lea County, New Mexico, for millions. FOR SALE—Perpetual deeded oil royalty. Small investors take a chance for huge profits; play with the Big Boys, they make money. Write Monarch Inv. Co., Roswell, N. M.

ROYALTIES—PRODUCTION

YATES POOL ROYALTY

WILL sell 1 acre or more Sections 10 and 19, Blk. 194, Pecos County at $250.00 per acre. Glen Myers, San Angelo, Texas.

PARTICIPATING ROYALTY. 10 to 40 acres. Your share of lease bonus will probably exceed cost of royalty. Full data Box C-978, The Oil and Gas Journal, Tulsa, Okla.

BROKERS WANTED
TO HANDLE
YATES POOL OIL ROYALTY

Perpetual mineral deed under producing royalty, 3 wells just completed, potential reported over 19,000 Bbls. daily, lots of undrilled locations, Gusher territory, full section mile square, sell acreage lots over all. Write, Robert E. Ellis, Saint Angelus Hotel Building, San Angelo, Texas.

McCURTAIN COUNTY, OKLAHOMA, is due for the next big play in oil and while it is now time get in on some of the best Royalty in the County in approved territory. Write Idabel Abstract Co., Idabel, Okla.

WEST TEXAS ROYALTIES and leases, all active areas. Cheap land and ranches. J. L. Ferguson, San Angelo, Tex.

TULSA ROYALTY EXCHANGE
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A special service to out
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PERPETUAL Deeded Royalty, Diamond Basin, Park County, Wyoming. $100.00 buys 1/320 of 11½ per cent royalty 78 acres one-half mile to Nelson No. 1 drilling and nearing pay sand. Only a limited amount for sale and must be bought before well comes in.

HARRY ROBERTSON, Owner
P. O. Box 2
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ROYALTIES—PRODUCTION

HARPER COUNTY, Okla. Royalty for sale around Sinclair deep test. P. O. Box 385, Tulsa, Okla.

ARKANSAS royalties and drilling blocks in Cleveland and Grant Counties; 13½ acres in fee in Smackover fields for sale or trade. J. D. Shearer, Stuttgart, Ark.

J. A. WOLF & COMPANY
127 N. Dearborn, Chicago, Illinois.
We deal in Oklahoma Royalties
exclusively.

SEDGWICK, Harvey County, Kansas, Royalties on core drilled blocks, offsetting drilling wells and locations, also Ness County leases and royalties. James R. Haynes, Grantville, Kansas.

LEA COUNTY, NEW MEXICO
Perpetual Royalties.
W. S. PATTERSON
Pecos, Texas.

REAL ESTATE

120 ACRES near Jenks, Okla. Fine for country homes or subdivision, on hard surfaced roads, near pavement. Gas, shallow water. Write E. Fackler, Manchester, Kans.

MONEY RAISING

CAPITAL SEEKERS

Will endeavor placing proposition of merit on underwriting basis. Box 44, Room 407, 26 Court Street, Brooklyn, N. Y.

FINANCE YOUR OWN project with shares bonded. Quickest, most satisfactory known method of raising capital. Information free. Bankers Interstate Security. Electric Bldg., Denver, Colo.

ADVERTISING RATES

	1 Time	2 Times	3 Times	1 Mo.
3 lines	1.05	1.80	2.25	3.30
4 lines	1.40	2.40	3.40	4.40
5 lines	1.75	3.00	4.25	5.50
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7 lines	2.45	4.20	5.95	7.70
8 lines	2.80	4.80	6.80	8.80
9 lines	3.15	5.40	7.65	9.90
10 lines	3.50	6.00	8.50	11.00

(Six words usually make a line)

Compute white space at the above rates.

Mail your advertisement to

THE OIL AND GAS JOURNAL

Tulsa, Oklahoma

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Chicago Market Looking for Change

Some Refiners Withdraw Quotations Saying They Are Out of Market for a Few Days. Buying Expected

By J. B. Waldo

CHICAGO, July 1.—There was a sense in the market this morning of some coming change in the gasoline situation, nothing definite but sufficient to cause a feeling of caution to govern the local trade. One thing that caused this was a number of refiners who at the close of last week were naming low prices who this morning withdrew quotations or refused to quote saying they were out of the market for a few days. It may be only a coincidence but it added force to the many reports that some of the larger companies were planning to buy and take care of some of the material that is being pressed on the market. This is the logical thing at this time and there has been much comment at the absence of this buying.

There was little increase in the early demand this week and it is not expected there will be any real increase in the buying as it is too near the Fourth of July for jobbers to buy material to reach them this week. The major refiners were holding to their 9¼-cent price and the other sellers were careful in quoting only on gasoline which they had covered by previous orders. There is not much of this as the buying for July has been limited.

Waiting Attitude

Aside from this feeling that there was to be some change in the situation which would result in the strengthening of the market there was nothing worthy of note in the local situation. There have been similar reports previously but any foundation has been lacking. It may be that the refusal of some of the refiners who had been most anxious to sell to name prices at present is not due to purchases made or options taken on their output but simply to the fact that they are in better position to wait for a while to see if they cannot secure better prices themselves as the demand from jobbers increases as the latter draw on their stocks.

Kerosene continued quiet and easy. Some of the distributors were sending in instructions for delivery of furnace oils on their contract shipments to be made in July. One of the leading refiners which has a full line of fuel oils has advanced the prices on all grades of heavy and light fuel oils and is now making a distinction between the ordinary cold test and the zero cold test fuel oils of 5 cents a barrel. Oklahoma gas oils were found to be scarce by buyers and the market very firm. There was the usual first of the month demand for the heavy fuel oils, orders being very largely against contracts and the spot market dull.

The last week in June was very largely a repetition of the two preceding weeks. In fact like conditions have prevailed in the Chicago tank car market since the early days of the month. The consumption continues large and the point that has so perplexed the sales managers for petroleum organizations is how it was possible with jobbers making such records for larger gasoline sales, they could remain out of the market so long and so steadily. What spot buying there has been came from the smaller distributors who have limited storage and operating on small stocks must buy from time to time. There was a meeting of the Dixie Jobbers at St. Joe, Mich., early last week and an attempt was made by several local managers who attended as guests of the organization to obtain some sort of an idea as to the quantity of gasoline carried in stock and how long it would probably last. These inquiries found the smaller members were buying from time to time as they were obliged to and were hunting for low prices, and finding them with little difficulty. The larger jobbers stated they had considerable supplies of gasoline available and did not expect to be much interested in the market for from 10 days to four weeks. An average was roughly made by some of those who talked with these larger jobbers that they would begin to buy some gasoline about July 10. If the weather continues as favorable for use of cars for the next week, as during the past two weeks, they should be in the market a little earlier.

"No Fourth of July"

Regarding any preparations for the Fourth of July holiday, the local trade is a unit in the statement that so far as sales records are any indication, there is not going to be any Fourth of July this year. There has been no buying to this writing in this market and it is now too late for any material quantity of gasoline to be ordered out to arrive at destination before the Fourth or even during the two days of the week, which will follow that event.

One of the local sales managers for a large Mid-Continent refining organization thought there must be some business to be had if it was only gone after in the right way. He took his car and drove some 900 miles during the week, passing through parts of three of the best gasoline states. The result of this tour of investigation was that he found every jobber he called on with no exception that he could recall when relating his experiences, was doing a larger gasoline business than a year ago but all of them had stocks which they claimed would last them for some time, some saying they should not order until after the Fourth, others until the middle or later part of July. He came back convinced the only thing to do was to wait until the jobbers were forced to buy.

Another head of a local sales office was convinced that after such a fine week as week before last with its ideal weekend there must be a lot of country jobbers in need of supplies. On Monday morning he gave the telephone girl a list of his good friends among the not-too-far distant jobbers and started to test his idea of waiting business. He called 15 with no results of any consequence in the way of sales and stopped as he was not getting enough in orders to pay the toll charges. All of the jobbers told him they had plenty of gasoline. In another instance the tank car sales manager asked that the writer wait until he had talked to two or three of his customers just to see what the result would be. Two of them stated they had enough gasoline for two weeks and the third said he would not be in the market for 30 days.

These incidents are mentioned because it has been rather difficult for the local managers to realize how little spot business there has been and it must be more difficult for those who are at a distance and not in daily touch with the situation. There seems to be quite a large number of jobbers who, according to their own statements made to their refiner or other regular source of supply, expect to be in the market in about two weeks which might be from July 5 to 10. These jobbers do not expect to buy heavily over the remainder of the season. Several have stated in regard to their contracts that they were taking their minimum amounts under their contracts and buying what they needed in addition on the outside as they could buy cheaper than from their refinery. Some sales managers state they are having a hard time to get some of their contract customers to take the minimum amount they should under their agreements. These jobbers have also stated that they should be in no hurry to place their shipping instructions for July. They believe that under present conditions it is not to their advantage to do so. For one thing they do not expect any further tank wagon advances nor any increase in the price of gasoline at the refineries. They admit they may be wrong in these conclusions but several have stated that their ideas of the July business had been set back by the offering of U. S. Motor gasoline over July at 8¼ cents, Group 3, from a number of refiners who were thoroughly responsible and turned out good material. In addition to these there were many refiners whose product was not so reliable who were very anxious for business and while the jobber himself would not buy the product of these less responsible refiners except in an emergency, still their product would give fair satisfaction to motorists during the summer season.

Price Range

The gasoline price market showed a wide range all of last week, U. S. Motor gasoline being quoted for prompt shipment all the way from 8 cents up to 9¼ cents. The latter price was that of the major Oklahoma refiners and if there was any number of spot orders written at that price their local offices did not write them.

One of the large refiners with plants both in the Group and the Central States was stated by its sales department to be moving over 30 cars a day at 9¼ cents but his fellow sales managers while hating to doubt his word were of the opinion there was more to be said than was contained in that statement. One critic remarked that if his organization, which was just as well known for quality material and superior service, could not sell two cars a day with 10 men working in the territory to make sales, the other fellow must be including shipments to his own stations. The other extreme was the quotation made by some refiners, chiefly out of West Texas, but not confined to that field, of 8 cents. This price was at first made to resellers but later was broadcast to the trade all over the territory in at least three of the market letters sent out from Tulsa naming a price of 8 cents, Gorup 3, for U. S. Motor gasoline for immediate shipment and 8¼ cents for delivery over the month of July. There were some sales of well-known material at 8⅜ to 8½ cents, but little above that last price, the 9¼-cent quotation being made by major refiners.

Low Prices in Ohio

There were some very low prices quoted for delivery in Ohio. One quotation was made to the buyer for a string of stations from Cincinnati to Columbus. His quotation, which was a delivered price, was 8¼ cents for Columbus and 8.10 cents for Cincinnati and Dayton and he did not secure the business although assured of the order on a parity of price with other bidders. There is a world of gasoline apparently seeking buyers in Ohio, eastern Michigan and even parts of Indiana. Some of it comes from Toledo, some from Franklin, Pa., and other western Pennsylvania points and in the southern part of Ohio from Kentucky and New Orleans. The Chicago refineries are also bidding for some of this trade and owing to freight advantages are getting a portion. The situation as regards the Group 3 and Texas refiners will not be improved by the addition to the volume of gasoline seeking a market in the Central West from refineries now building near this city and in Muskegon, with a capacity for running 25,000 bbls. a day of crude.

The antiknock gasolines are still strongly favored, so much so that the demand for the gravities above the U. S. Motor grade are selling very slowly and the prices are easy. Natural gasoline has been dull and closed last week with lower prices. The failure of the export organization which is handling the foreign business of most of the larger refiners to advance the export price of gasoline is not looked upon by concerns here as helping the situation. Locally at least, there is very little movement for export.

There has been very little buying by resellers over July. They were offered good U. S. Motor gasoline by responsible and well-known refiners late last week at 8⅛ cents for delivery over the entire month of July but few bought for the reason expressed by one of the leading marketers that there was too much stuff offered him, not only from Oklahoma but as he said from everywhere and by organizations with whom he had never done business before. His idea, and it is that of others in the industry here who are in the same position, is that if there is so much gasoline seeking a buyer now, every week of the same kind of demand will increase that amount. There is simply too much gasoline and the only way to maintain the much-talked-of but seldom if ever realized balance between consumption and refinery output is to reduce the runs according to these oil men the success of whose business depends very largely on their ability to "outguess" the market, that is to anticipate material changes in price or demand.

Kerosene Spotty

Kerosene has moved to really a larger extent than many anticipated. The demand is "spotty." A good deal seems to depend on the seller in the country. Some of the country jobbers have been surprisingly successful in making a demand for kerosene. Others seem to let the buyers come to them. The spread between kerosene and gasoline is wider than it was in the time of the spring plowing and it is easier to sell kerosene for tractor fuel. However, the market has been a little easier, some soft spots have developed and good kerosene has been bought by jobbers at 5½ cents being offered for resale and in some instances direct by refiners to the jobbers at 5⅜ cents.

Distillates Dull

There is practically no present demand for distillates, just an occasional car for some special purpose. On the other hand, it is not being freely offered by refiners, many of whom are cracking what wold otherwise be distillate material and others who have the cut are holding it for their own customers, either tank car or tank wagon. The feeling in the trade here is that the number of new installations will be very considerable, some believe that in this vicinity there will be 25 per cent more oil burners in use than a year ago. One maker of a popular domestic oil burner said he believed the number of new burners installed in this vicinity would amount to 10,000 of all makes. On the basis of 2,000 gallons a season to each burner, which is called a fair average by several large distributors, this would mean there would be an increase in the territory covered by this seller of 2,500 tank cars of light furnace oils sold. These estimates are all more or less speculative but the belief is growing that the furnace oil business is worth catering to. Several in the oil trade here have spoken of the specifications sent out by the Heat Institute for some of the oils, particularly for gas oil, as impracticable and a possible cause for trouble. The only thing for the refiner to do, if he receives orders for certain specifications which he cannot cut, is to have a full

(Continued on Page 168)

Continued Firmness on the East Coast

Constantly Increasing Records of Gasoline Consumption With Lubricants and Waxes Exceptions to General Stability

By A. E. Mockler
New York Bureau, The Oil and Gas Journal

NEW YORK, July 1.—Continued firmness with constantly increasing records of gasoline consumption marked the situation in the East Coast refined market this week. Lubricating oils and waxes continue to be exceptions to the general stability, both products showing weakness in price and slackness in movement. The market as a whole, however, is proving most satisfactory and last year's business at this time is being exceeded by a notable volume.

Despite general trade expectations of an upward movement in the tank wagon price situation, no such event has yet materialized in this territory. Tank wagon sales are large and will probably establish new high records. But at the same time competition is keener and this fact, coupled with present production, has caused the price situation to remain stationary pending further developments.

Tank Car Gasoline

Heavy withdrawals have been made against contracts placed at the 10-cent level for U. S. Motor at the local refineries, the markets remaining firmly based on this figure. There have been no reports of sales below this level during the week, all ideas on the subject being of the opposite nature. Spot buyers who have specialized in taking advantage of distress lots have been forced to operate in the open market and pay the full price.

The significant part being played in the East Coast market this season by California gasoline is sharply illustrated by the American Petroleum Institute figures which reveal that for the week ending June 22 receipts of California products at Atlantic Gulf ports consisted entirely of gasoline, totaling 595,000 gallons. Sellers have found it possible, under present market conditions, to ask a premium of from one-fourth to one-half cent per gallon on the California gasoline in some instances, while others are holding it to the level of eastern gasoline.

Texas gasoline continues to play a minor part in this market, due to the variance in prices here and on the Gulf where the upward turn was much more pronounced. Practically the only Gulf gasoline in eastern markets is that contracted for some time ago before prices advanced. At present Gulf levels the cost of landing the Texas product here leaves practically no margin of profit for operators.

Premium motor fuels are selling up to 2 cents above U. S. Motor, but the demand has fallen off somewhat, although improvement is looked for. The New York State 2-cent tax on gasoline reacted unfavorably for the premium stock, as it forced a price of 22 to 24 cents. It is felt, however, that motorists who became accustomed to using the premium gasoline will return to it when they become more accustomed to the price level and realize the tax which sent it up also affected ordinary gasoline and that relatively they are paying no more for premium. Strengthened advertising effort is being put behind premium gas and the present campaign is expected to bring the desired results.

Leading refiners are unanimous in declaring there has been no let down in demand, and that nothing has developed in the past week to change their opinion that 1929 will establish new high consuming records in the eastern market.

Uncertainty as to price changes, with prevailing reports of impending advances, has combined to bring a heavy buying movement into operation. Higher prices in other territories and the fact that tank wagon prices here have not been changed despite the advance in tank car in addition to higher prices led observers here to feel an advance at this time would be in keeping with conditions. Refiners and marketers who have long been the leading factors in this territory are finding their positions seriously challenged by the entry of outside organizations whose operations here are meeting with success that this season will see a race for gallonage such as has not marked this territory for years. This is one of the reasons why tank wagon gasoline prices have been at a standstill while gasoline in other channels was advancing.

Interests who hold a "bearish" outlook on the gasoline market are having difficulty in having their views generally approved in the face of the present consumption rate. However, they consider their views well based, as outlined in this department several weeks ago, and persist in their belief that a mid-summer break will occur, due to the concentration of refiners, operators and shippers on this market.

Kerosene

It is understood that seasonal concessions have been made in kerosene prices, but the refiners hold their quotations unchanged. They have curtailed production to some extent in anticipation of a showing in demand, and feel generally a weaker market has been anticipated and that no downward revision of prices is necessary. Water white holds at 8 cents in tank cars at the important East Coast refinery terminals, although it is reported that some sales during the past week were made at 7¾ cents. Tank wagon business in kerosene is being unusually well maintained and no change is anticipated in the 15-cent quotation which has ruled for nearly two years.

Fuel Oil

Conditions in the fuel oil division, refiners declare, are little changed from the several preceding weeks. The price at marine terminals is still $1.05 per barrel, in bulk, with a lighterage charge of 5 cents per barrel for delivery alongside within the harbor. This price also applies at other principal Atlantic Coast terminals. With steamship travel now at virtually its height for the summer, consumption by the large marine interests is running at peak levels. Lighterage fleets of the large refiners are kept busy in moving fuel oil for bunkerage, and refiners expect this rush will continue throughout the summer.

While refiners concede the market position is still somewhat unfavorable, from the standpoint of supply, they express the belief that the situation will gradually clear up, and that a better fuel oil market will be witnessed during 1930. This theory is based on the success with which the conservation movement is meeting, as well as the fact that larger quantities of South American crude than hitherto will be cracked, thus tending to dam the flood of South American fuel oil. The Mexican situation, it is added, is also favorable to a gradual slackening in the import movement of bunker oil.

Industrial consumption of fuel oil is showing seasonal curtailment in some quarters, but the aggregate volume is reported to be fairly large.

Petrolatum

Markets are showing a somewhat stiffer trend, in line with the general firmness in refined products, particularly lub oil. Some refiners in Pennsylvania and Ohio are reported talking higher prices on petrolatum contracts for fall and winter deliveries. Early inquiry from the pharmaceutical trade indicates manufacturers using petrolatum will use greater quantities this year than last. The past year was a record breaker in many respects, in so far as consumption by the drug manufacturing trade was concerned. No changes are noted in spot petrolatum this week.

Diesel Oil

With little accumulation of surplus stocks of Diesel in this market, the situation continues firm and unchanged, with demand balancing production and with prices steady at $2 to $2.10 per barrel, bulk, at refineries. The $2 level was resorted to by one factor anxious to secure an account which had been distributed to several sellers. In the main, however, $2.10 stands as the market price.

Refineries and marketers are keeping close watch on shipping developments, having come to the decision that one of the outstanding fields for the consumption of Diesel oil will be in shipping. They are keeping tab on shipyard production schedules, and note a good proportion of new bottoms will be oil burning. In addition, there have been several large ships temporarily retired to conversion as oil burners. A slow but continuous expansion of demand is the result of the introduction of Diesel oil to new industrial uses.

Lubs

Uncertainty rules in cylinder stocks, setting lubricating oils apart from the generally satisfactory market conditions. There is a varying range of as much as 4 cents in prices, and buyers are unwilling to proceed on a large scale with such a condition existing. What business is consummated is of a purely spot nature, as prices do not remain the same from day to day. Whether or not stability can be affected at a level under the present high but above the present low is questioned, as it would hardly meet with the confidence of buyers in view of the erratic course of the past few weeks.

Red and pale oils move in fair volume, with slightly lessened activity in tank car movement at the East Coast terminals. Prices hold firm at quoted levels, and the undertone of the market generally is steady.

Gas Oil

A moderate demand continues for gas oil, with 5½ cents quoted for 32-36 recycled gas oil, but with sales reported at 5 cents. There has been the usual seasonal curtailment of consumption by artificial gas companies, despite which volume continues satisfactorily.

Holders of straightrun gas report they can get almost any price as the open market is markedly short. Premiums are quickly paid for available stock. Refiners who find themselves short of gas oil for cracking operations this summer are scouring the market for straightrun.

Paraffin Wax

Market demand continues somewhat abated, with prices easier and uncertain as a result. Nominal asking prices are in the majority of cases reported to be from one-eighth to one-half cent above actual sale prices. What demand exists is for spot shipments, with little interest in future deliveries on the part of either the domestic or foreign buyers. The market quotations continue with 4⅛ cents generally agreed upon for 125-127 a.m.p. refined. On 135-137 stock can be found at 6⅝ cents. Scale is easy, demand light, and prices nominal.

Export Markets

There has been no inquiry for export gasoline during the week, and little activity is anticipated. The action of the Export Petroleum Association deciding at its meeting Thursday to take no action towards a price advance at present would seem to bring strength to the market, as all the talk of the trade has been in anticipation of a rise. That foreign buyers who are keeping close watch on developments here will anticipate such an advance by placing orders at the present level seems a logical conclusion. But sales in recent weeks have been so heavy indicates no actual need exists for purchases now, and the buyers may decide to gamble on the prospect of prices remaining unchanged.

Petroleum Exports

The following table shows principal exports of petroleum and refined petroleum products from New York during the last three weeks (all figures in gallons unless otherwise noted:)

	June 22	June 15	June 8
Gasoline	421,000	310,000	894,000
Naphtha	605,000	853,000	842,000
Kerosene	388,000	197,000	403,000
Fuel oil	14,000	3,800	783,000
Lubricating oil	2,269,000	2,148,000	900,000
Petroleum, refi'ed	932,000	787,000	1,697,000
		Pounds	
Petrolatum	.....	.....	10,000
Paraffin wax	817,000	1,435,000	423,000
Refined	.....	.....	314,000
Scale	.....	162,000	314,000
Lubr. grease	1,253,000	1,516,000	495,000

Export movement of lub oil continued above the 2,000,000 mark for a second consecutive week, the previous lull because of the advances then made in cylinder stocks having come to an end due to the necessity of filling the foreign demand despite higher prices. The movement of gasoline into foreign channels continued slow and below the 500,000-gallon mark. Kerosene showed a better demand, exports almost doubling those of the previous week. South America proved one of the leading buyers of the products from this port.

Imports

Imports of crude and refined oils at the principal United States ports for the week ended June 22 totaled 1,460,000 bbls., a daily average of 208,571 bbls., compared with 2,434,000 bbls., a daily average of 347,714 bbls. for the previous week and a daily average of 271,714 bbls. for the four weeks ended June 22. Details follow:

At Atlantic Ports
(barrels of 42 gallons)

Baltimore	128,000
Boston	193,000
New York	704,000
Philadelphia	50,000
Others	186,000
Total	1,261,000
Daily average	180,143

At Gulf Coast Ports

New Orleans and Baton Rouge	199,000
Total	199,000
Daily average	28,428

At All United States Ports

Total	1,460,000
Daily average	208,571
Daily average four weeks	271,714

California Oil Receipts

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended June 22 totaled 595,000 bbls., a daily average of 85,000 bbls., compared with 468,000 bbls., a daily average of 66,857 bbls. for the previous week, and a daily average of 59,536 bbls. for the four weeks ended June 22. Details follow:

At Atlantic Coast Ports
(Barrels of 42 gallons)

Baltimore	200,000
New York	125,000
Philadelphia	193,000
Others	77,000
Total	595,000
Daily average	85,000
Daily average four weeks	59,536

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Natural Gasoline Manufacture

Market in Domestic And Industrial Gas Expanding Rapidly

The Phillips Petroleum Co. is making rapid progress in developing new markets for domestic and industrial fuels which it is manufacturing as by-product of the company's natural gasoline plant operation. The company's research department spent several years in developing these products, the production of which has been placed on a commercial basis with the increased demand from domestic and industrial buyers.

The domestic fuel of the Phillips Petroleum Co. is known as "Philgas" and the whole group of products, including industrial gases, are known as "Philfuels." These products vary in characteristics and in general constitute the lighter hydrocarbons which are not desirable as a constituent of natural gasoline and are removed in the operation of the plants. Philgas vaporizes at all temperatures down to 44 degrees below zero. The gases are sold under pressure either in cylinder or specially constructed tank cars.

Regarding the sale of these gases, O. K. King, treasurer of the company, states:

"Philfuels Co. has domestic fuel wholesale and retail stations adjacent to Detroit, Cleveland, Indianapolis, Baltimore, Washington, D. C., Boston, three stations near New York City, and is rapidly entering other new areas, with the ultimate aim of national distribution. At each of these stations, fuel is retailed by our patented system which has effected economies in sales and operation.

"The industrial fuel market is an entirely new field for natural gasoline products and has been exploited by the Philfuels Co. for about 15 months. During this time many wholesale buyers have been secured under contracts which assure an outlet for the fuel at favorable prices over periods of three to five years duration. Among the large buyers are: A. O. Smith Corp., pipe and automobile frame manufacturers; General Motors Corp., Chrysler Corp. and Corning Glass Works, makers of Pyrex. The fuel is used in the steel, ceramic, food products, nonferrous metals, textiles, glass and other industries.

"Another new field developed by the sales and research engineers of the Philfuels Co. lies in the utilization of these fuels by the public utility companies in the manufacture of city gas. Contracts for purchase of these fuels are being considered by many leading utility companies. Among present contract purchasers in this field are: United Light & Power Co., Sheridan Gas Utilities Co., Linton Gas & Coke Co., Citizens Gas Co., Great Lakes Utilities Co. and the Louisville Gas & Electric Co.

"Philfuels Co., a wholly owned subsidiary of Phillips Petroleum Co., is engaged in developing and expanding the many markets for these gaseous fuels. Improved and distinct departures in methods of merchandising made possible by our sales engineering staff have been responsible for both the enlargement of existing markets and the opening of entirely new markets."

USE REPAIR CREWS TO TRAIN NEW EMPLOYES

The Standard Gasoline Co., which is the natural gasoline plant operating subsidiary of the Standard Oil Co. of California and the largest manufacturer in that State, is using its repair crew to train employes in the operation of plants. As one phase of its plant operation the management maintains repair crews, which at regular intervals inspect plants and gathering systems and make whatever repairs are necessary.

It has been found that employment on this repair crew is an excellent method of training employes in the operation of plants. Due to the nature of its work, the repair crew gains an intimate knowledge of all the equipment used at natural gasoline plants, including operation and repair methods. The repair crew works by districts and is composed of a foreman, machinist, repairmen No. 1 and No. 2, roustabout and laborer. The size of the crew depends on the work to be done. In addition to the crew proper the company now usually has one or more men who are classed as students of repair work and methods.

Writing of the duties of the repair crew, N. B. Holbrook of the Standard Gasoline Co. says:

"One duty of the repair crew, which is not often thought of, is the planning required, the detail necessary to keep a group of men continuously supplied with material, and the men on the most important work without loss of time by men or machines. This requires a high degree of co-operation and co-ordination between plants, repair crews, shop, warehouse and office, for a slip any place along the line requires a readjustment of plans which always means a loss, and perhaps a considerable one, when a machine 'down waiting' is needed and production suffers.

"The emergency job is also a big factor in disrupting repair plans, for it too calls for a readjustment; men must be taken from one job to another, material must be found and rushed in, and time lost on both jobs. Our aim, then, is the reduction of emergency jobs to the minimum by planned shut-downs based on knowledge from past experience and adequate records of past performance, together with better care by operating crews while running."

NEW PLANTS EXPAND IN KETTLEMAN HILLS AREA

The Standard Gasoline Co. (Standard Oil Co. of California) has practically completed the construction of a gasoline plant in the Kettleman Hills Field of California, and The Texas Company has completed a large addition to its plant which was the first to be built in the field. The Standard plant is located in the same section as its No. 81 well which is now drilling. The company has been making extensive preparations to handle the wet gas which will be available when several wells are completed. The first plant will have an initial capacity of 30,000 gallons daily which will be sufficient to take care of the gas from two wells.

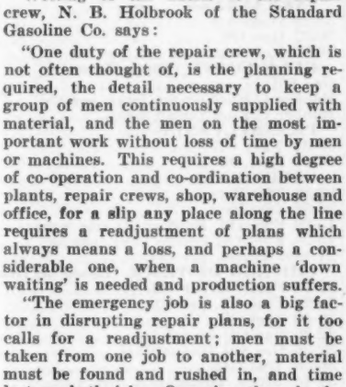
It is anticipated that the Kettleman Hills Field will be a large producer of natural gasoline. The gas from the discovery well shows an average gasoline content for the gas with a large volume. The Standard company has made preparations to increase its plant facilities in line with the demands of the field.

The Texas Company which has been operating the first plant in the field for several months, has found it necessary to add six more units. These units which were scheduled to start operating the first week in July will have a capacity of 15,000,000 cubic feet of gas daily which will give the plant a total of 100,000,000 cubic feet of gas daily. The Texas Company is taking the gas from discovery well of Milham company.

A PRACTICAL SUGGESTION

FRACTIONATION COTANGENT

Recently a large manufacturer of refinery fractionation towers adopted the fractionation cotangent as a gauge of tower efficiency of rectification as a function of design and construction. This method



very clearly shows the degree of fractionation and can be used by natural gasoline manufacturers in several ways and will afford a means of comparison not attained by any of the present methods as it gives two factors—temperature and distillation percentage—in one unit.

Cotangent is a triponometrical function. In a right-angled triangle, it is simply the quotient of the adjacent side divided by the opposite side. In this application it is the percentage increment divided by the temperature increment. In refinery gasoline or naphtha, it can best be used by expressing it specifically as the percentage recovery above 90 per cent divided by the temperature rise in degrees Fahrenheit from the 90 per cent to the endpoint of the Engler distillation.

In the curve shown the cotangent of AA is: $\frac{6\%}{60° F.}$ or 0.10.

The cotangent of BB is: $\frac{8\%}{20° F.}$ or 0.40.

It is apparent that the higher the fractionation cotangent, the sharper the cut or degree of rectification.

This method of expressing fractionation is applicable in dephlegmator design and operation, and with still and stabilizer work. In studying these problems a different percentage and temperature range may be used. This method is also valuable in choosing a suitable naphtha for blending purposes. The lower the fractionating cotangent of the naphtha, the lower will be the endpoint of the blended gasoline. In other words, a poorly fractionated naphtha is better for blending than a highly rectified one with the same endpoint.

Practical suggestions by those connected with the construction and operation of natural gasoline plants are invited. Payment will be made as soon as suggestions are accepted. Address all communications to the Natural Gasoline Department, The Oil and Gas Journal, Tulsa.

CALIFORNIA PRODUCTION SHOWS DECLINE IN MAY

One hundred thirty-eight natural gasoline plants in California with a daily indicated capacity of 2,007,496,000 feet, report a recovery of 65,615,209 gallons of natural gasoline from 44,857,851,000 feet of gas treated in May. This is a decrease of 1,104 bbls. in daily average production.

Utilization of natural gasoline amounted to 1,447,024 bbls., a decrease under April of 13,129 bbls. Daily average utilization of 46,678 bbls. was 3,718 bbls. less than daily average production of 50,396 bbls.

Stocks of natural gasoline at the end of May amounted to 1,511,195 bbls., of which 34,221 bbls. were reported by natural gasoline plant operators and 1,476,974 bbls. by refinery operators. This is an increase of 115,243 bbls. over April stocks. This stock figure of 1,511,195 bbls. is approximately 32 days' supply at the current rate of consumption.

California Natural Gasoline Production, Distribution and Stocks, May, 1929

Production by Fields

Field—	Gas treated thousand cu. ft.	Natural gasoline produced (gallons)
Fullerton and Whittier	571,067	1,282,056
Midway	3,075,246	4,782,001
Huntington Beach	1,480,732	3,461,013
Long Beach	11,588,251	19,508,651
Richfield	1,249,909	1,506,529
Santa Fe Springs	10,453,898	16,586,084
Seal Beach	2,727,638	3,705,409
Ventura Avenue	7,474,092	8,492,633
All other fields	6,237,017	8,396,833
Total	44,857,851	65,615,209

Production

Type of plant—	Gas treated M.O.F.	Natural gasoline produced (gallons)	Gasoline recovery per M.C.F. gas treated
Oil absorp.	32,556,353	46,388,754	1.425
Compressor	248,338	284,431	1.145
Comb. Comp. and oil absp.	12,053,110	18,930,220	1.571
Drip	.....	11,804	....
Total	44,857,851	65,615,209	1.463
Finished gasoline produced at plants, bbls.			36,546

Distribution

		Bbls.
Stocks first of month		1,395,952
Produced during month		1,562,267
Quantity mixed with or unfinished oils	232,076	
Used in blending at refineries	1,156,800	
Stocks end of month	1,511,195	
Used at plants, shortage and evaporation losses	14,599	
Balance	43,549	
	2,958,219	2,958,219

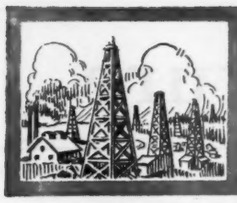
Stocks

	Gallons	Bbls.
Natural gasoline held by natural gasoline plant operators	1,437,279	34,221
Natural gasoline held by refiners	62,032,908	1,476,974
Total	63,470,187	1,511,195

SINCLAIR TO BUILD TWO LARGE OKLAHOMA PLANTS

The Sinclair Oil & Gas Co. will build two new plants in Oklahoma in the next 60 days, one a 50,000-gallon absorption plant near Oklahoma City, and the other a 25,000-gallon plant between Allen and Wewoka in the greater Seminole area. At present the company has two producing wells in the new Oklahoma City Pool, one of which is making considerable gas. More than 50,000 gallons of 70 gravity gasoline are being recovered daily in the separators and traps at present without running it through a natural gasoline plant. The field location of the larger plant is given as Section 30-11-2w.

With the addition of the 25,000-gallon plant in the Sasakwa district between Wewoka and Allen, in Section 7-6-8, the company will have a combined total capacity in the greater Seminole area of 275,000 gallons.



REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

	July 2		June 25		June 18	
OKLAHOMA (Group 3)—						
50-52 450 endpoint	.08¼	.08¾	.08¼	.08¾	.08¾	
56-58 450 endpoint	.08¼	.08¾	.08¼	.08¾	.08¾	
58-60 450 endpoint	.08¼	.08¾	.08¼	.08¾	.08¾	.09
*58-60 437 endpoint (U. S. Motor)	.0923		.0925		.0925	
*60-62 437 endpoint	†.09	.09¼	.0942		.0938	
*60-62 400 endpoint	.0925		.0950		.0950	
*64-66 375 endpoint	.095		†.09½	.09¾	.0975	
68-70 360 endpoint	.09¼	.09¾	.09¼	.09¾	.09¾	.10
64-66 437 endpoint (blend)	.08½	.08¾	.08¾	.09	.09	.09¼
*Weighted average prices July 1, June 24 and 17, as reported by representative refiners. Sales to jobbers only. †No sales reported. Price indicated is general market.						
NORTH TEXAS—						
56-58 450 endpoint	.08¼	.08⅜	.08¼	.08⅜	.08⅜	.08¾
58-60 450 endpoint	.08¼	.08⅜	.08¼	.08⅜	.08½	.08¾
58-60 437 endpoint (U. S. Motor)	.08¼	.08¾	.08¼	.08¾	.08¾	.09¼
60-62 400 endpoint	.08½	.08¾	.08½	.08¾	.09	.09¼
64-66 390 endpoint	.08⅝	.08¾	.08⅝	.09	.09⅛	.09⅜
64-66 375 endpoint	.08¾	.09	.08¾	.09	.09½	.09⅝
68-70 360 endpoint	.09	.09¼	.09⅛	.09⅜	.09⅝	.09¾
64-66 437 endpoint (blend)	.08½	.08¾	.08½	.08¾	.08½	.08¾
***NORTH LOUISIANA—**						
58-60 437 endpoint (U. S. Motor)	.09¾	.10	.09¾	.10	.09¾	.10
***ARKANSAS—**						
58-60 437 endpoint (U. S. Motor)	.09¾	.10	.09¾	.10	.09¾	.10
PENNSYLVANIA—						
52-54 Naphtha	.09	.09½	.09	.09½	.08½	.09
54-56 Naphtha	.09½	.10	.09½	.10	.09¼	.09½
58-60 Gasoline	.09¾	.10	.10	.10½	.10	.10½
60 Gasoline	.10¼	.10½	.10¼	.10½	.10¼	.10½
62 Gasoline	.10¼	.10½	.10½		.10½	
64 Gasoline	.10¾	.11	.10¾	.11	.10¾	.11
68-70 350 endpoint gasoline	.11¼	.11½	.11¼	.11½	.11¼	.11½
CALIFORNIA—						
58-60 437 endpoint (U. S. Motor) domestic	.09	.10	.09	.10	.09	.10
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.08½	.08¾	.08¾	.08⅞	.08¾	.09
56-58 450 endpoint	.08½	.08¾	.08¾		.08¾	.09
58-60 437 endpoint (U. S. Motor)	.08½	.09¼	.08¾	.09¼	.08¾	.09¼
60-62 400 endpoint	.09⅛	.09⅜	.09¼	.09¾	.09¼	.09⅝
64-66 375 endpoint	.09⅜	.09¾	.09⅝	.09⅞	.09⅝	.09⅞
68-70 360 endpoint	.09¾	.10	.09¾	.10	.09¾	.10
64-66 437 endpoint (blend)	.08¾	.09	.09	.09¼	.09⅛	.09¼
GULF COAST (Export)—						
58-60 (U. S. Motor)	.08½		.08½		.08½	
60-62 400 endpoint	.09½		.09½		.09½	
61-63 390 endpoint	.09¾		.09¾		.09¾	
64-66 375 endpoint	.10		.10		.10	

*Louisiana, Arkansas, Mississippi, East Texas delivery.

NATURAL GASOLINE

	July 2		June 25		June 18	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.07	.07⅜	.07¼	.07½	.07⅝	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.07	.07⅜	.07¼	.07½	.07½	
Grade B, 76-83.9, 375 e.p., rec. 85%	.06¼	.06⅜	.06½	.06⅝	.07⅛	.07¼
Grade BB, 84-92, 375 e.p., rec. 85%	.06¼	.06⅜	.06½	.06⅝	.07⅛	.07¼
Grade C, 80-90, 375 e.p., rec. 78%	.06¼	.06⅜	.06½	.06⅝	.07	.07⅛
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.07	.07½	.07⅜	.07½	.07¼	.07½
Grade AA, 80-87.9, 375 e.p., rec. 90%	.07	.07½	.07⅜	.07½	.07¼	
Grade B, 76-83.9, 375 e.p., rec. 85%	.06¼	.06⅜	.06½	.06⅝	.07⅛	
Grade BB, 84-92, 375 e.p., rec. 85%	.06¼	.06⅜	.06½	.06⅝	.07⅛	
Grade C, 80-90, 375 e.p., rec. 78%	.06¼	.06⅜	.06½	.06⅝	.07	.07⅛
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.07½	.07⅝	.07⅝	.07¾	.07¾	.08
Grade BB, 84-92, 375 e.p., rec. 85%	.06¾	.07	.07¼	.07⅜	.07⅜	.07¾
Grade C, 80-90, 375 e.p., rec. 78%	.06¾	.07	.07¼	.07⅜	.07½	
CALIFORNIA—						
75-78 375-390 endpoint	.09	.09½	.08½	.09	.08½	.09¼
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.07	.07½	.07¼	.07½	.07⅝	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.07	.07½	.07¼	.07½	.07½	
Grade B, 76-83.9, 375 e.p., rec. 85%	.06¼		.06½	.06⅝	.07¼	
Grade BB, 84-92, 375 e.p., rec. 85%	.06¼		.06½	.06⅝	.07⅛	
Grade C, 80-90, 375 e.p., rec. 78%	.06¼		.06½	.06⅝	.07	.07⅛

BURNING OIL

	July 2		June 25		June 18	
OKLAHOMA (Group 3)—						
41-43 water white kerosene	.05½	.05¾	.05¾	.06	.05¾	.06
42-44 water white kerosene	.06	.06⅛	.06⅛	.06½	.06¼	.06½
***NORTH LOUISIANA—**						
41-43 water white kerosene	.06½	.06¾	.06½	.06⅜	.06¾	.07
NORTH TEXAS—						
41-43 water white kerosene	.05¼	.05½	.05½		.05½	
40-42 water white kerosene	.05⅛	.05¼	.05¼		.05¼	
***ARKANSAS—**						
41-43 water white kerosene	.06½	.06¾	.06½	.06¾	.06¾	.07
PENNSYLVANIA—						
43 Kerosene prime white	.06¼	.06½	.06¾	.07	.06½	.06¾
45 Kerosene water white	.06¼	.06½	.06¾	.07	.06½	.06¾
46 Kerosene water white	.07	.07¼	.07	.07¼	.07	.07¼
47 Kerosene water white	.07¼	.07½	.07½	.07¾	.07½	.07¾
300 Mineral Seal	.07¼	.07½	.07¼	.07½	.07¼	.07½
CALIFORNIA—						
38-40 water white Kero. (high-burning test)	.05¾	.06½	.05¾	.06½	.05¾	.06½
Engine distillate, 43-44, 445 endpoint	.08	.08¾	.08	.08¾	.08	.08¾
Engine distillate, 42-44, 480 endpoint	.07½	.08¼	.07½	.08¼	.07½	.08¼
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.05½	.06	.05¾	.06	.05¾	.06
42-44 water white kerosene	.06	.06¼	.06	.06¼	.06	.06¼
GULF COAST (Export)—						
41-43 prime white	.07		.07¾		.07¾	
41-43 water white	.08		.08¾		.08¾	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

	July 2		June 25		June 18	
OKLAHOMA (Group 3)—						
Below 18 Fuel Oil, per bbl.	.45	.50	.45	.50	.50	.55
18-22 Fuel Oil, per bbl.	.52½	.55	.50	.55		
20-22 Fuel Oil, per bbl.	.55	.60	.55	.60	.55	.60
22-26 Fuel Oil, per bbl.	.60	.65	.60	.65	.60	.65
24-26 Fuel Oil, per bbl.	.65	.70	.65	.70	.65	.70
26-30 Fuel Oil, per bbl.	.77½	.82½	.77½	.82½	.82½	.87½
28-30 Fuel Oil, per bbl. (industrial)	.85	.90	.85	.90	.87½	.90
32-36 Gas Oil (industrial)	.02⅜	.02½	.02⅜	.02½	.02⅜	.02½
32-36 Gas Oil (straw color)	.02⅝	.02¾	.02⅝	.02¾	.02⅝	.02¾
36-38 Distillate	.03	.03⅛	.03	.03⅛	.03	.03⅛
38-40 Straw Distillate	.03¼	.03½	.03¼	.03½	.03¼	.03½
NORTH TEXAS—						
Below 20 Fuel Oil	.60	.65	.60	.65	.60	.65
24-26 Fuel Oil, per bbl.	.65	70	.65	.70	.65	.70
32-36 Gas Oil (straw)	.02⅜	.02½	.02⅜	.02½	.02⅜	.02½
38-40 Straw Distillate	.03¼		.03¼		.03¼	
***NORTH LOUISIANA—**						
18-20 Fuel Oil, per bbl.	.70	.80	.70	.80	.70	.80
30-32 Gas Oil	.02¾	.03	.02¾	.03	.02¾	.03
***ARKANSAS—**						
33-36 Distillate	.03	.03¼	.03	.03¼	.03	.03¼
30-32 Gas Oil	.02¾	.03	.02¾	.03	.02¾	.03
16-22 Refinery Fuel Oil, per bbl.	.70	.80	.70	.80	.70	.80
GULF COAST (South Texas)—						
Gas Oil	.04		.04		.04	
Bunker C Fuel (cargo lots), per bbl.	.80	.85	.80	.85	.80	.85
Bunker C Fuel (small lots)	.95	1.00	.95	1.00	.95	1.00
PENNSYLVANIA—						
30-34 Fuel Oil	.04½	.04¾	.04½	.04¾	.04½	.04¾
36-40 Fuel Oil	.04¾	.05	.04¾	.04⅞	.04¾	.04⅞
CALIFORNIA—						
33-36 Distillate	.04	.04½	.04¼	.04¾	.04¼	.04¾
26-32 Distillate	.03	.03½	.03½	.04	.03½	.04
15-20 Fuel Oil, Bunker (at tide water)	.65	.85	.65	.85	.65	.85
15-20 Fuel Oil (cargo lots), per bbl.	.70	.85	.70	.85	.70	.85
27 plus Diesel, per bbl.	.90	1.05	.90	1.05	.90	1.05
CHICAGO DISTRICT (Based on Group 3)—						
22-26 Fuel Oil, per bbl.	.60	.65	.60	.65	.60	.65
18-22 Fuel Oil, per bbl.	.45	.50	.45	.50	.45	.50
28-30 Fuel Oil	.87½	.95	.87½	.95	.87½	.92½
32-36 Gas Oil (zero)	.02½	.02⅝	.02½	.02⅝	.02½	.02⅝
32-36 Gas Oil (industrial)	.02⅜	.02½	.02¼	.02½	.02¼	.02½
36-38 Distillate	.03¼	.03⅜	.03¼	.03⅜	.03⅜	.03¼
38-40 Straw Distillate	.03⅜	.03¾	.03⅜	.03⅝	.03⅜	.03½

*Louisiana, Arkansas, Mississippi, East Texas delivery.

LUBRICATING OIL AND WAX

	July 2		June 25		June 18	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.06¾	.07	.06¾	.07	.06¾	.07
100 vis., 3 color, 20-25 cold test	.05¾	.06	.05¾	.06	.05¾	.06
150 vis., 3 color, 20-25 cold test	.07¾	.08	.07¾	.08	.07¾	.08
150 vis., 4 color, 20-25 cold test	.07¼	.07½	.07¼	.07½	.07¼	.07½
180 vis., 3 color, 23-28 cold test	.09¼	.09½	.09¼	.09½	.09¼	.09½
180 vis., 4 color, 23-28 cold test	.08¾	.09	.08¾	.09	.08¾	.09
180 vis., 5 color, 23-28 cold test	.08½	.08¾	.08½	.08¾	.08½	.08¾
200 vis., 3 color, 23-28 cold test	.09¾	.10	.09¾	.10	.09¾	.10
200 vis., 4 color, 23-28 cold test	.09¼	.09½	.09¼	.09½	.09¼	.09½
200 vis., 5 color, 23-28 cold test	.08¾	.09	.08¾	.09	.08¾	.09
240 vis., 3 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis., 4 color, 25-30 cold test	.12¼	.12½	.12¼	.12½	.12¼	.12½
240 vis., 5 color, 25-30 cold test	.11¾	.12	.11¾	.12	.11¾	.12
280 vis., 3 color, 25-30 cold test	.15¾	.16	.15¾	.16	.15¾	.16
280 vis., 4 color, 25-30 cold test	.14¾	.15	.14¾	.15	.14¾	.15
280 vis., 5 color, 25-30 cold test	.13¾	.14	.13¾	.14	.13¼	.14
Cylinder Stocks:						
600, steam refined, light green	.14	.16	.14	.16	.14	.15
600, steam refined, dark green	.13	.14	.13	.14	.13	
190-200 vis., D color Bright Stock	.40		.40		.40	
150-160 vis., D color Bright Stock	.35	.36	.35	.36	.35	
150-160 vis., E color Bright stock	.33		.33		.33	
Waxes:						
124-126 White Crude Scale Wax	.02½		.02½		.02½	
PENNSYLVANIA—						
34 Neutral	.07¾	.08	.07¾	.08	.07¾	.08
34 Sundebloom	.07¾	.08	.07¾	.08	.07¾	.08
36 Miners' Neutral	.07¾	.08	.07¾	.08	.07¾	.08
150, 3 color	.20½	.21	.20½	.21	.20½	.21
180, 3 color	.26	.26½	.26	.26½	.26	.26½
200, 3 color	.28	.28½	.28	.28½	.28	.28½
220, 3 color	.31	.31½	.31	.31½	.31	.31½
600, steam refined	.27	.28	.31	.32	.32½	.33
635, steam refined	.29	.30	.34	.35	.34	.35
650, steam refined	.37	.37½	.37	.38	.37	.38
600, Pennsylvania Flash	.38	.39	.38½	.39½	.38½	.39½
630, Pennsylvania Flash	.40	.40½	.41	.42	.41	.42
600, E filtered	.35	.36	.36½	.37	.36½	.37
600, D filtered	.38	.39	.39	.40	.39	.40
Pennsylvania Bright Stock	.51	.52	.51	.52	.51	.52
*122-124 White Crude Scale Wax	.02⅞	.03	.02⅞	.03	.02⅞	
*124-126 White Crude Scale Wax	.03	.03⅛	.03	.03⅛	.03	.03⅛
*At New York.						
GULF COAST (South Texas)—						
No. 2 color, 100 vis., pale oil	.06½	.07	.06½	.07	.06½	.07
No. 3 color, 200 vis., pale oil	.09½	.10	.09½	.10	.09½	.10
No. 3 color, 300 vis., pale oil	.10½	.10¾	.10½	.10¾	.10½	.10¾
No. 3½ color, 500 vis., pale oil	.11¾	.12¼	.11¾	.12¼	.11¾	.12¼
No. 4 color, 750 vis., pale oil	.13	.13½	.13	.13½	.13	.13¼
No. 5 to 6 color, 200 vis., red oil	.08½	.08¾	.08½	.08¾	.08½	.08¾
No. 5 to 6 color, 300 vis., red oil	.09¾	.10¼	.09¾	.10¼	.09¾	.10¼
No. 5 to 6 color, 500 vis., red oil	.11¼	.11½	.11¼	.11½	.11¼	.11½
No. 5 to 6 color, 750 vis., red oil	.12½	.13	.12½	.13	.12½	.13
No. 2½ color, 200 vis., pale filtered	.11	.12	.11	.12	.11	.12
No. 2½ color, 300 vis., pale filtered	.12	.13	.12	.13	.12	.13

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

No. 2½ color, 500 vis., pale filtered	.14½	.15	.14½	.15	.14½	.15
No. 2½-3 color, 750 vis., pale filtered	.17	.19	.17	.19	.17	.19
CALIFORNIA—						
130 vis., 2½-3 color	.10¼	.10½	.10¼	.10½	.10¼	.10½
200 vis., 2½-3 color	.11½	.11¾	.11½	.11¾	.11½	.11¾
300 vis., 3-3½ color	.13	.13½	.13	.13½	.13	.13½
350 vis., 3½-4 color	.13½	.13¾	.13½	.13¾	.13½	.13¾
400 vis., 3½-4 color	.15	.15½	.15	.15½	.15	.15½
Red Neutral:						
200 vis., 4½-5 color	.11	.11¼	.11	.11¼	.11	.11¼
300 vis., 5-6 color	.12	.12¼	.12	.12¼	.12	.12¼
400 vis., 5-6 color	.13¼	.14	.13¼	.14	.13¼	.14
500 vis., 4½-5 color	.14¼	.15½	.14¼	.15½	.14¼	.15½
500 vis., 5-6½ color	.15	.15¼	.15	.15¼	.15	.15¼
600 vis., 6½ plus color	.16	.16¼	.16	.16½	.16	.16½

Note—Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	July 2	June 25	June 18
Gasoline, U. S. Motor, 58-60, 437	.11	.10	.10
Kerosene, water white, 41-43	.08	.08	.08
*Fuel Oil, Bunker "C," 14-16. per bbl.	1.05	1.05	1.05
†Fuel Oil, Diesel 28-30, per bbl.	2.00	2.00	2.00
Gas Oil, 32-36 gravity	.05	.05	.05½
25 pale Paraffin Oil	.10½	.10½	.10½
28 pale Paraffin Oil	.07¼	.07¼	.07¼
285 red Paraffin Oil	.11½	.11½	.11½
250 red Paraffin Oil	.11	.11	.11
225 red Paraffin Oil	.09½	.09½	.09½
200 red Paraffin Oil	.09	.09	.09
Refined Wax:			
120-122 a.m.p., per lb.	.03⅝	.03⅝	.03⅝
125-127 a.m.p., per lb.	.04⅛	.04⅛	.04⅛
130-132 a.m.p., per lb.	.04¾	.04¾	.04¾
133-135 a.m.p., per lb.	.06⅛	.06⅛	.06⅛
135-137 a.m.p., per lb.	.06½	.06½	.06½
Petrolatum in barrels, carload lots, per pound:			
Dark green	.02	.02	.02
Amber	.03½	.03½	.03½
Extra amber	.03¾	.03¾	.03¾
Cream	.06½	.06½	.06½
Lily white	.07½	.07½	.07½
Snow white	.08½	.08½	.08½

*Lighterage 5.0 cents a barrel extra. †Lighterage 6.5 cents a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	July 2	June 25	June 18	
Kerosene, prime white	.08	.08	.08	
Kerosene, water white	.09	.09	.09	
600, steam refined cylinder stocks, in bbls.	.42	.42	.42	.43
635, steam refined	.44	.44	.44	.45
650, steam refined	.49	.49	.49	.50
600, Pennsylvania Flash	.52	.52	.52	.53
630, Pennsylvania Flash	.57	.57	.57	.58
600, Warren E	.44	.44	.44	.45
600, Oil City E	.44	.44	.44	.45
Light 140-150 Bright Stocks	.61	.61	.61	.66
Dark 140-150 Bright Stocks	.60	.60	.60	.64

LOS ANGELES EXPORT PRICES

	July 2		June 25		June 18	
Kerosene, water white	.05	.05½	.05½	.06	.05½	.06
U. S. Motor Gasoline, 53-55, 437 e.p.	.07	.07½	.07	.07½	.07	.07½

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Corsicana heavy (January 11)* ..... .80
Other fields .....See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties—See gravity table.

WEST TEXAS

Iatan* .....Same as North Texas
Crane-Upton-Crockett, Pecos, Winkler, Mitchell, and Glasscock (See gravity table).
Chalk† ..... .65

*Includes Howard County and Westbrook Fields.
†Posted by Humble Oil & Refining Co.

ARKANSAS-NORTH LOUISIANA

Smackover, below 24 gravity (May 20, 1929) .....$ .85
Smackover, 24 gravity and above (May 20, 1929) 1.00
Cotton Valley (Below 36 gravity May 22) ..... .85
Bellevue (May 29, 1929) 1.30
Urania (May 21, 1929) 1.10
East El Dorado (May 22, 1929) ..... .85
Other fields .....See gravity table

Cotton Valley crude above 36 gravity takes same gravity price schedule as shown for North Louisiana and Arkansas crude in Mid-Continent gravity price table.

Note—Smackover, Cotton Valley and Bellevue posted by Standard Oil Co. of Louisiana, and Magnolia Petroleum Co.; Urania posted by Louisiana Oil Refining Corp.; East El Dorado, Magnolia Petroleum Co.

GULF COAST

Grade A (May 20)* $1.30
Grade B .....See gravity table
Jennings, La. (March 14)† 1.05
Saratoga, Batson, Dayton (March 14, 1927)‡ 1.30
Markham (March 14)§ 1.00
High Island (December 14)¶ 1.00

*Humble Oil & Refining Co., The Texas Company, Gulf Pipe Line Co., and Sun Pipe Line Co. †Gulf Pipe Line Co. ‡Sun Pipe Line Co. §The Texas Company.
¶Posted by Gulf Pipe Line Co.

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Sildwest Refining Co.
(Effective May 21, 1929)

Rock Creek, Wyo. $1.40
Salt Creek .....See gravity table
Big Muddy 1.43
Grass Creek, heavy (July 27, 1928) ... .90
Grass Creek, light 1.65
Mule Creek 1.20
Elk Basin 1.65
Lance Creek 1.68
Poison Spider (March 14, 1927) 1.00
Notches (March 14, 1927) ..... .65
Rex Lake (February 22) 1.10
Osage 1.65
Lost Soldier (contract, May 22) 1.05
Hamilton Dome (March 14, 1927) ..... .85
Greybull 1.65
Cat Creek (Montana) (July 27, 1928).. 1.48
Sunburst (Montana) (May 23, 1929) ... 1.75
Torchlight 1.65
Hogback (New Mexico) (July 27, 1928) 1.70

Note—Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

SOUTH CENTRAL AND SOUTH-WESTERN TEXAS

Luling (May 2)* .....$ .90
Mirando (May 20, 1929)† ..... .90
Salt Flat (May 20, 1929)§ 1.30
Rockdale-Minerva (April 15):
Below 28 gravity 1.25

(Continued on Page 164)

CRUDE OIL GRAVITY TABLE

Gravity—	1 Okla., Kans. N. C. Tex.	2 No. La. and Arkansas	3 Crane, Upton, Crockett, Winkler, Howard, Pecos, Texas crudes, and Les. N. Mex.	4 Stephens, Ark.	5 Wheeler (Texas Panhandle)	6 Gray County (Texas Panhandle)	7 Carson and Hutchinson (Texas Panhandle)	8 Salt Creek, Wyo.	9 Grade B & Light Crude (G. Coast)	10 Somerset (South Central Texas)
24 and above	....	....	....	....	....	....	....	....	....	....
Below 24	....	....	....	....	....	....	....	....	....	....
Below 25	.85	....	.70	....	....	....	....	....	1.15	....
25 to 25.9	.90	....	.74	....	....	....	....	....	1.18	....
26 to 26.9	.95	....	.78	....	....	....	....	....	1.21	....
27 to 27.9	1.00	....	.82	....	....	....	....	....	1.24	....
Below 28	....	1.00	....	.90	.90	.90	.90	....	....	....
28 to 28.9	1.05	1.05	.86	.94	.90	.90	.90	....	1.27	....
29 to 29.9	1.10	1.10	.90	.98	.90	.95	.90	1.10	1.30	....
30 to 30.9	1.15	1.15	.94	1.02	.95	1.00	.90	1.15	1.33	....
31 to 31.9	1.20	1.20	.98	1.06	1.00	1.05	.90	1.20	1.36	....
32 to 32.9	1.25	1.25	1.02	1.10	1.05	1.10	.95	1.25	1.39	1.05
33 to 33.9	1.30	1.30	1.06	....	1.10	1.15	1.00	1.30	1.42	1.07
34 to 34.9	1.35	1.35	1.10	....	1.15	1.20	1.05	1.35	1.45	1.09
35 to 35.9	1.40	1.40	1.14	....	1.20	1.25	1.10	1.40	1.48	1.11
36 to 36.9	1.45	1.45	1.18	....	1.25	1.30	1.15	1.45	....	1.13
37 to 37.9	1.50	1.50	....	....	1.30	1.35	1.20	1.50	....	1.15
38 to 38.9	1.55	1.55	....	....	1.35	1.40	1.25	....	....	1.17
39 to 39.9	1.60	1.60	....	....	1.40	1.45	1.30	....	....	....
40 to 40.9	1.65	1.65	....	....	1.45	1.50	1.35	....	....	....
41 to 41.9	1.70	1.70	....	....	1.50	1.55	1.40	....	....	....
42 to 42.9	1.75	1.75	....	....	1.55	1.60	1.45	....	....	....
43 to 43.9	1.80	1.80	....	....	1.60	1.65	1.50	....	....	....
44 and above	1.85	1.85	....	....	1.65	1.70	1.55	....	....	....

Column 1, Note—Magnolia Petroleum Co. posted schedule May 20, 1929, making price below 26 gravity 70 cents per barrel, 26-26.9 gravity 75 cents, 27-27.9 gravity 85 cents, 28-28.9 gravity 90 cents, 29-29.9 gravity 95 cents, 30-30.9 gravity $1.05, and 31.31.9 gravity $1.15, with balance of the price schedule as shown above.

Oklahoma—Carter Oil Co., Prairie Oil & Gas Co., Sinclair Oil & Gas Co., Gypsy Oil Co., The Texas Company, May 20.

North Central Texas—Including Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Nocona and Moran, Prairie Oil & Gas Co., Sinclair Oil Refining Co., Humble Oil & Refining Co., The Texas Company and Gulf Refining Co., May 20.

Kansas—Prairie, Sinclair, The Texas Company and Carter, May 20.

Column 2—Arkansas and North Louisiana—[Caddo, Bull Bayou, Crichton, Cotton Valley, above 36 gravity, DeSoto, Haynesville, Homer and El Dorado only], May 20, Standard Oil Co. of Louisiana, Louisiana Oil Refining Corp., Gulf Refining Co., Magnolia Petroleum Co., schedule applies to Pine Island, Haynesville, Bull Bayou, Louisiana and El Dorado, Ark., light crude.

Column 3—Humble Oil & Refining Co. and Magnolia Petroleum Co., May 20.

Column 4—Atlantic Oil Producing Co., Prairie Oil & Gas Co., Louisiana Oil & Refining Corp., May 21, 1929.

Columns 5, 6 and 7—Humble Oil & Refining Co., Magnolia Petroleum Co., May 20, 1929.

Column 8—Midwest Refining Co., May 20, 1929. All crude over 37 gravity $1.50 per barrel.

Column 9—Humble Oil & Refining Co., May 20, 1929 (schedule ends 35 and above).

Column 10—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.

CALIFORNIA CRUDE OIL PRICES

Standard Oil Co.-Union Oil Co. (Effective January 18, 1929)

Gravity—	1 Salt Lake, Potrero, Newport, Long Beach, Sumneriand, Lawndale Los Angeles, Fullerton, Richfield, Torrance, Olinda-Brea, Alamitos Heights, Signal Hill, Seal Beach, Huntington Beach, Athena, Inglewood, Rosecrans-Dominguez, Watsonville	2 Whittier, La Habra, Coyote Hills	3 Midway-Sunset, Elk Hills, Lost Hills, Beiridge, Buena Vista Hills	4 Montebello	5 Santa Fe Springs	6 Santa Maria, Coalinga	7 Wheeler Ridge, Fruitvale	8 Orcutt Ventura, Rincon	9 Ventura Ave.	10 Elwood Terrace
14 to 14.9	.70	.70	.50	.70	....	.50	.50	.65	.70	....
15 to 15.9	.70	.70	.50	.70	....	.50	.50	.65	.70	....
16 to 16.9	.70	.70	.50	.70	....	.50	.50	.65	.70	....
17 to 17.9	.70	.70	.50	.70	....	.50	.50	.65	.70	....
18 to 18.9	.75	.75	.56	.70	....	.56	.56	.70	.75	....
19 to 19.9	.80	.80	.62	.75	....	.62	.62	.70	.80	....
20 to 20.9	.85	.84	.68	.80	....	.68	.68	.70	.85	....
21 to 21.9	.89	.88	.74	.85	.89	.74	.74	.86	.84	....
22 to 22.9	.93	.91	.80	.90	.92	.80	.80	.87	.87	....
23 to 23.9	.97	.94	.85	.95	.95	.85	.85	.90	.90	....
24 to 24.9	1.01	.97	.90	.98	.98	.88	.88	.94	.94	....
25 to 25.9	1.05	1.00	.95	1.01	1.01	.91	.91	.98	.98	....
26 to 26.9	1.09	1.04	1.00	1.04	1.04	.94	.94	1.02	1.02	....
27 to 27.9	1.13	1.08	1.05	1.07	1.07	.98	.97	....	1.06	....
28 to 28.9	1.17	1.12	1.10	1.10	1.10	1.02	....	....	1.10	....
29 to 29.9	1.21	1.16	1.16	1.13	1.15	1.06	....	....	1.14	....
30 to 30.9	1.25	1.20	1.22	1.16	1.20	1.10	....	....	1.18	....
31 to 31.9	1.30	....	1.28	....	1.25	1.14	....	....	1.23	....
32 to 32.9	1.35	....	1.34	....	1.30	1.18	....	....	1.28	....
33 to 33.9	1.41	....	1.40	....	1.35	1.22	....	....	1.34	....
34 to 34.9	1.47	....	1.46	....	1.40	1.26	....	....	1.40	1.16
35 to 35.9	1.53	....	....	....	1.45	1.30	....	....	1.46	1.22
36 to 36.9	1.59	....	....	....	1.50	....	....	....	1.52	1.28
37 to 37.9	1.65	....	....	....	1.55	....	....	....	1.58	1.34
38 to 38.9	1.71	....	....	....	1.60	....	....	....	1.64	1.40
39 to 39.9	1.77	....	....	....	1.65	....	....	....	1.70	1.46
40 to 40.9	1.83	....	....	....	....	....	....	....	1.76	1.52
41 to 41.9	1.89	....	....	....	....	....	....	....	1.82	1.58
42 to 42.9	1.95	....	....	....	....	....	....	....	1.88	1.64

Kern River, Newhall-McKittrick, Mount Poso and Round Mountain 11 to 13.9 gravity 45 cents, 14 gravity and above 50 cents, effective October 2, 1929. On December 1, 1928, the Union Oil Co. posted Midway-Sunset, Elk Hills, Buena Vista, Lost Hills and Coalinga crude as follows: 11 to 13.9 gravity at 45 cents, 14 gravity and above 50 cents.

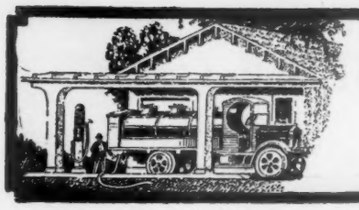
Column 1—Signal Hill, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Inglewood, 14 to 28.9 gravity, Domingues and Athens-Rosecrans, 24 to 42.9 gravity.

Column 2—Whittier crude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.

Column 3—Kern River, Newhall and McKittrick, 11 to 19.9 gravity; Midway-Sunset, Buena Vista and Elk Hills, 11 to 33.9 gravity; Lost Hills, 11 to 34.9 gravity; oil below 14 gravity posted at 45 cents.

Column 6—Oil below 14 gravity posted at 45 cents.

Columns 8 and 9 posted by Union Oil Co. only.



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns July 2.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Incl'ds tax of	Kero. tank wagon
Chicago dist.†..	16.0	17.0	...	13.0
Decatur, Ill. ...	16.2	17.2	...	13.1
E. St. Louis ...	15.4	16.4	...	12.2
Joliet	16.4	17.4	...	13.3
Peoria	16.2	17.2	...	13.1
Quincy	16.2	17.2	...	12.9
Davenport, Ia..	19.5	20.5	3.0	13.3
Des Moines ..	19.5	20.5	3.0	13.3
Keokuk	19.5	20.5	3.0	13.3
Sioux City	19.1	20.1	3.0	12.9
Duluth, Minn..	20.5	21.5	3.0	13.9
Mankato	20.1	21.1	3.0	13.7
Minneapolis ...	20.2	21.2	3.0	13.9
LaCrosse, Wis..	19.2	20.2	2.0	14.0
Milwaukee	18.1	19.1	2.0	12.9
Madison	18.3	19.3	2.0	13.1
Detroit, Mich...	19.8	20.8	3.0	14.7
Grand Rapids..	19.7	20.7	3.0	14.6
Saginaw	19.9	20.9	3.0	14.8
Evansville, Ind.	20.0	21.0	4.0	14.0
Fort Wayne ..	20.4	21.4	4.0	14.4
Indianapolis ..	20.2	21.2	4.0	14.2
South Bend ...	20.4	21.4	4.0	14.4
Fargo, N. D...	21.9	22.9	3.0	15.9
Huron, S. D. ..	21.3	22.3	4.0	14.7
Sioux Falls ...	20.1	21.1	4.0	14.4
K. C., Mo.* ...	18.9	19.9	3.0	11.6
Springfield* ..	18.8	19.8	3.0	12.5
St. Louis*	17.9	18.9	2.5	12.3
St. Joseph	18.5	19.5	3.0	12.2
Wichita, Kans..	17.8	18.8	3.0	11.8
Bartlesville, Ok.	18.5	19.5	4.0	11.5

*State tax 2 cents; remainder city tax.
†Effective February 20, discounts on Q.D.A. in Chicago district 2 cents off service station price on purchases of 500 gallons or more per month and 4 cents on purchases of 1,000 gallons or more per month.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	15.7	12.9
V. M. & P. Naphtha	17.2	13.9
Cleaner's naphtha	17.0	14.9
Stanisol	18.0	15.4

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9.0
100 to 799 gallons	8.0
800 gallons or more	7.5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

The following quantity discounts from the service station price are allowed on monthly sales of gasoline; 2,000 gallons or less, 2 cents; more than 2,000 and less than 6,000 gallons, 2½ cents; more than 6,000 gallons, 3 cents. Discounts are allowed each month, and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discount on the previous month's purchases.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Incl'ds tax of	Kero. tank wagon
Dallas, Tex. ...	15.0	19.0	2.0	13.0
Fort Worth ...	15.0	18.0	2.0	12.0
Houston	15.0	19.0	2.0	13.0
San Antonio ..	15.0	19.0	2.0	11.0
El Paso	17.0	20.0	2.0	16.0
Texarkana	16.0	19.0	2.0	13.0
Muskogee, Okla.*	16.0	19.0	4.0	13.0
Okla. City* ...	16.0	19.0	4.0	10.0
Tulsa*	14.0	18.0	4.0	10.0
Ft. Smith, Ark.	15.0	19.0	5.0	13.0
Little Rock ...	20.0	24.0	5.0	13.0

*Gasoline tank wagon price to dealers 2 cents under posted tank wagon.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Incl'ds tax of	Kero. tank wagon
Denver, Colo...	18.0	21.0	4.0	15.5
Pueblo	18.0	21.0	4.0	15.5
Grand Junction	22.5	25.5	4.0	19.0
Casper, Wyo. ..	21.0	24.0	4.0	14.0
Cheyenne	22.0	25.0	4.0	15.5
Butte, Mont. ..	25.5	28.5	5.0	20.0
Helena	25.5	28.5	5.0	20.0
Salt Lake, Utah	22.0	25.0	3.5	17.0
Albu'que, N. M.	21.0	24.0	5.0	17.0
Boise, Idaho ..	24.5	27.5	4.0	19.0
Twin Falls	24.5	27.5	4.0	19.0

PENNSYLVANIA—DELAWARE AND PART NEW ENGLAND

The Atlantic Refining Co.

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Incl'ds tax of	Kero. tank wagon
Pittsburgh, Pa.	17.0	*23.0	...	14.0
Philadelphia ..	17.0	*23.0	...	14.0
Scranton	17.0	*23.0	...	14.0
Allentown	17.0	*23.0	...	14.0
Altoona	17.0	*23.0	...	14.0
Erie	14.0	*19.0	...	14.0
Dover, Del.	20.0	22.0	3.0	14.0
Wilmington ...	20.0	22.0	3.0	14.0
Springf'd, Mass.	18.0	20.0	2.0	15.0
Worcester	17.0	18.0	3.0	16.0
Boston	18.0	20.0	2.0	15.0
Providence, R.I.	16.0	17.0	3.0	15.0
Hartford, Conn.	18.0	20.0	2.0	14.0
New Haven ...	18.0	20.0	2.0	15.0

*Includes tax of 4.0 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the state. The Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purposes of resale. The Atlantic Refining Co. also recognizes a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Incl'ds tax of	Kero. tank wagon
Albany, N. Y...	15.0	17.0	2.0	15.0
New York*	19.0	21.0	2.0	15.0
Buffalo	16.0	18.0	2.0	14.0
Rochester	16.0	18.0	2.0	14.0
Syracuse	16.0	18.0	2.0	15.0
Boston, Mass...	18.0	20.0	2.0	15.0
Augusta, Me...	20.0	22.0	4.0	15.0
Manch't'r, N.H.	20.0	22.0	4.0	15.0
Burlington, Vt..	19.0	20.0	4.0	15.0

*Prices in steel barrels.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Incl'ds tax of	Kero. tank wagon
Atlanta, Ga. ...	22.0	24.0	4.0	16.5
Augusta	22.0	24.0	4.0	15.5
Macon	22.0	24.0	4.0	16.5
Savannah	21.0	23.0	4.0	15.5
Birm'ham, Ala.	22.0	24.0	4.0	16.0
Mobile	22.0	24.0	4.0	15.0
Montgomery ...	23.0	25.0	4.0	16.5
Clarks'le, Miss..	22.0	24.0	5.0	12.5
Jackson	22.0	24.0	5.0	13.0
Natchez	21.5	23.5	5.0	14.0
Gulfport	23.5	25.5	5.0	14.0
Vicksburg	21.5	23.5	5.0	14.0
Jack'ville, Fla..	22.0	24.0	5.0	14.5
Miami	23.0	25.0	5.0	15.5
Pensacola	23.0	25.0	5.0	14.5
Tampa	23.0	24.0	5.0	14.5
Lexington, Ky..	21.0	23.0	5.0	15.5
Covington	21.0	23.0	5.0	15.5
Louisville	21.0	23.0	5.0	15.0
Ashland	18.0	19.0	5.0	15.5
Catlettsburg ..	18.0	19.0	5.0	15.5

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. Pensacola and Mobile taxes include 1-cent city levy. Gulfport tax includes privilege tax of 2 cents in addition to state tax.

PACIFIC COAST TERRITORY

Standard Oil Co. (California)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Incl'ds tax of	Kero. tank wagon
San Francisco..	19.0	23.0	3.0	15.5
Los Angeles ..	18.5	22.5	3.0	15.5
Reno, Nev. ..	24.0	26.0	4.0	19.0
Portland, Ore..	19.5	23.5	3.0	16.5
Seattle, Wash..	18.5	22.5	2.0	16.5
Tacoma	18.5	22.5	2.0	16.5
Spokane	22.5	26.5	2.0	20.5
Phoenix, Ariz..	18.0	22.0	4.0	20.5

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Incl'ds tax of	Kero. tank wagon
Omaha	20.25	23.25	4.0	13.25
McCook	21.75	23.75	4.0	14.75
Norfolk	20.75	22.75	4.0	13.75
N. Platte	21.75	23.75	4.0	14.50
Scottsbluff	21.75	23.75	4.0	14.25

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Incl'ds tax of	Kero. tank wagon
Atlantic City ..	14.0	18.0	2.0	13.0
Newark, N. J...	16.0	20.0	2.0	13.0
Annapolis, Md..	18.0	22.0	4.0	13.0
Baltimore	18.0	22.0	4.0	12.0
Cumberland ...	18.0	22.0	4.0	13.0
Washington ...	16.0	20.0	2.0	12.0
Danville, Va. ..	19.0	23.0	5.0	12.0
Norfolk	19.0	23.0	5.0	13.0
Petersburg	19.0	23.0	5.0	13.0
Roanoke	19.0	23.0	5.0	13.0
Richmond	19.0	23.0	5.0	13.0
Charles'n, W.Va.	18.0	22.0	4.0	13.0
Keyser	18.0	22.0	4.0	13.0
Parkersburg ...	16.0	20.0	4.0	13.0
Wheeling	18.0	22.0	4.0	13.0
Charlotte, N. C.	19.0	23.0	5.0	13.0
Hickory	19.0	23.0	5.0	13.0
Mt. Airy	19.0	23.0	5.0	13.0
Salisbury	18.0	23.0	5.0	13.0
Charleston, S.C.	20.0	24.0	6.0	13.0
Columbia	20.0	24.0	6.0	13.0

OHIO

Standard Oil Co. (Ohio)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Incl'ds tax of	Kero. tank wagon
Ohio points* ..	20.0	21.0	4.0	†14.0

*Dealers and commercial accounts 2 cents under tank wagon.
†Service station price 16 cents.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline: Tank wagon	Gasoline: Service station	Gasoline: Incl'ds tax of	Kero. tank wagon
N. Orleans, La.*	18.5	22.5	5.0	16.0
Baton Rouge ..	17.0	21.0	4.0	14.5
Alexandria	18.0	22.0	4.0	16.0
Lafayette†	19.0	23.0	5.0	14.0
Lake Charles†.	19.5	23.5	5.0	16.0
Shreveport	18.5	22.5	4.0	15.0
Knoxv'le, Tenn..	20.0	24.0	5.0	16.0
Memphis	18.0	22.0	5.0	12.5
Chattanooga ...	21.5	25.5	5.0	16.0
Nashville	19.0	23.0	5.0	16.0
Bristol	22.0	25.0	5.0	14.0
Lit. Rock, Ark..	20.0	24.0	5.0	13.0

*Tax of 5 cents includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax and 1-cent parish tax.
†Includes 1-cent parish tax.

NEUTRALS TIGHTENING IN COASTAL MARKETS

HOUSTON, Tex., July 2.—The seasonal increase in demand for heavier viscosity lubricating oils were reflected in Gluf refinery markets the past week with a sharp tightening of neutrals above 500 viscosity. This was indicated chiefly in the 750 stock which was available only from limited sources. Several sellers are completely sold up on these heavier stocks for 60 days or more. Up to Tuesday sellers had not advanced their prices on these grades over the preceding week, but the situation prevented any selling below those prices. The lighter oils fell off correspondingly in demand, but very little of these grades are being made at this time of year, and the market is in fair shape.

Fuel oils and gas oils continued unchanged. Fuel oil is available but still is fairly tight with prices strong. Buyers report having difficulty in finding desired material in sufficient quantities. Most of the movement is in small lots. Gasolines apparently are holding fairly firm despite reported easing up in other areas. Spot material for domestic local movement is being quoted from 10¾ to 10½ cents on motor grades. Export kerosene prices were reduced three-quarter cents, effective June 29.

CRUDE PRICE CHANGES

June 26—Standard Oil Co. of Indiana advanced Dundee, Michigan, crude 15 cents to $1.25.

July 1—Joseph Seep Purchasing Agency posted new prices on three Pennsylvania grade oils. Pennsylvania grade in New York lines prior to July 1 is posted at $4, after July 1 at $4.05. The same changes apply to Bradford district oil in National Transit lines and to the Pennsylvania grade oil in National Transit lines.

TANK WAGON CHANGES

June 19—Standard Oil Co. of California advanced the gasoline tank wagon price 1 cent in California, Washington and Oregon.

June 26—Standard Oil Co. of New Jersey reduced the gasoline tank wagon price in Parkersburg, W. Va., to 16 cents and advanced the station price 3 cents in Salisbury, N. C., to 23 cents.

July 1—The Pennsylvania gasoline tax was increased from 3 to 4 cents as an emergency measure and will remain until January 1, 1930, when it will return to the 3-cent basis. Standard Oil Co. of Indiana advanced the gasoline tank wagon and station prices 1 cent in North Dakota to equalize the increase in the state tax from 2 to 3 cents.

BRITISH GUIANA OIL DISCOVERY

It has been officially reported that the resident engineer in charge of the drilling of artesian wells in British Guiana has found certain indications of oil in a well under drilling in Berbice County. Drilling operations there had reached a depth of 1,625 feet when oil indications and gas became so pronounced the government stopped drilling and blocked up the well with concrete for fear of a blowout.

CRUDE OIL PRICES

(Continued from Page 163)

38-38.9 gravity	1.27
39-39.9 gravity	1.29
40 and above	1.31
Thrall‡	...
Callihan (May 15)	1.75
Lytton Springs (Lockhart)	See gravity table
Somerset	See gravity table

*Posted by Magnolia Petroleum Co.
†Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co.
‡Thrall prices same as North Central Texas less 19½ cents per cwt. freight.
§Humble Oil & Refining Co.

EASTERN STATES

Joseph Seep Purchasing Agency
(Effective January 4, 1929)

Penna Grade Oil in New York Transit Lines (New York) (July 1, 1929) ..	$4.05
Bradford District Oil in National Transit Lines (Pennsylvania) (July 1, 1929)	4.05
Penna Grade Oil in National Transit Lines (Pennsylvania) (July 1, 1929)..	4.05
Penna Crude Oil in Southwest Pennsylvania Lines (West Virginia)	4.00
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	3.90
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	3.85
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (May 22, 1929)	1.75
Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s Line (May 22, 1929).	1.80
Corning 25-cent Grade Oil in Buckeye Pipe Line Co.'s Lines (May 22, 1929)	1.90
Somerset Oil in Cumberland Pipe Line Lines (Kentucky) (May 22, 1929) ...	1.80
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky) (Jan. 29) ...	.60

MIDDLE WESTERN STATES

Ohio Oil Co.
(Effective May 21, 1929)

Lima	$1.80
Wooster	1.90
Illinois	1.75
Indiana	1.57
Princeton	1.75
Plymouth	1.28
Waterloo (November 17, 1926)	1.35
Western Kentucky	1.83
Dundee, Mich. (June 26, 1929)‖	1.25
Upper and Lower Traverse sands, Mich.‖ ..... Same as Mid-Continent gravity scale	
Midland, Mich. (June 3, 1929)*	1.70
Saginaw, Mich., Saginaw Sand (February 10)†	1.89
Saginaw, Mich., Berea Sand (February 10)†	1.79
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky, (March 15)‡	1.50
Oil in line in Stoll Oil Refining Co. in Oil City, Ky. (June 1, 1929)‖	1.80
Oil Springs (Canada)¶	2.27
Petrolia (Canada)¶	2.20

*Posted by Pure Oil Co.
†Posted by Sun Oil Co.
‡Posted by Paragon Development Co.
§Posted by Stoll Oil Refining Co.
¶Posted by Imperial Oil Co., Ltd.
‖Posted by Standard of Indiana for boat shipment.

MEXICAN CRUDE

Panuco (May)*	$ .60

*Average of sales for May.

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Movement of Petroleum Securities

Report of Sinclair for First Five Months. New Continental Oil Balance Sheet. Indiana Pipe Capital Changes

Sinclair Consolidated Oil Corp. had net profit, before reserves, of about $13,000,000 in the first five months of 1929. This contrasts with approximately $7,000,000 for the corresponding period of last year.

For the first half of 1929 consolidated net, again before reserves, is estimated at $16,000,000 in contrast with profits of $9,900,000 in the first six months of last year. This means an improvement of about 60 per cent.

Sinclair's net after all charges in 1928 was $13,447,347, or $2.70 a share after 8 per cent preferred dividends on 4,497,165 average number of shares outstanding during the year, and $2.21 a share on the 5,500,000 shares out at the close of the year. This compared with $5,391,081, or 89 cents a share on 4,509,480 shares in 1927. Affording a rough comparison with the six months' figures above, net before reserves, but after taxes and charges in 1928 was $32,865,899 against $24,145,937 in 1927.

Improved profits this year, it is said, have come from a combination of better results in the refinery department, enlarged profitable operations of both the marketing and producing departments and larger dividends from the pipe line subsidiary.

New Continental Oil

Pro-forma balance sheet as of March 31, 1929, filed with New York Stock Exchange, of Marland Oil, Prudential Refining and Continental Oil Co., to be absorbed by the new Continental Oil Co. of Delaware, after giving effect to acquisition, shows total assets of $195,922,956 and capital surplus of $18,436,740. Current assets amounted to $58,022,850 and current liabilities $9,167,803.

Pro-forma balance sheet as of March 31, 1929, of Continental Oil Co. of Delaware, follows:

Assets: Property account after depletion, intangible drilling costs and depreciation, $118,398,794; investments and advances after reserves, $14,702,483; unadjusted debits and sundry assets, $4,798,829; cash, $13,534,631; government securities and call loans, $8,427,733; notes receivable, $789,586; accounts receivable, $8,747,919; inventories, crude and refined products, $22,915,639; materials and supplies, $3,425,350; interest receivable, $94,721; miscellaneous demand items, $87,271; total, $195,922,956.

Liabilities: Capital stock, $127,927,159; capital surplus of combined companies after giving effect to adjustments, $18,436,740; minority interests, $755,333; funded debt and long term obligations, $35,756,900; purchase obligations, $1,314,000; mortgages payable, $1,276,206; unadjusted credits, $391,152; reserve for contingencies, $897,663; notes payable, $1,586,683; accounts payable, $5,917,117; miscellaneous current liabilities, $1,664,003; total, $195,922,956.

For quarter ended March 31, 1929, Continental Oil Co. (old company) showed net loss of $768,058 after interest, depreciation, depletion, intangible drilling costs, etc.

Indiana Pipe Line

Directors of Indiana Pipe Line Co. have authorized payment to stockholders of $20 from capital stock reduction account, payable August 15 to stock of record July 26.

An extra dividend of $3 was declared in addition to the regular quarterly dividend of $1, both payable on the $50 par capital stock August 15 to stock of record July 26. In preceding quarters the extra dividend has been $1.

Stockholders at special meeting June 25 approved the reduction in capital stock to $3,000,000, consisting of 300,000 shares of $10 par, from $5,000,000, consisting of 100,000 shares of $50 par. This was to provide for distribution of assets not required for the company's proper operation.

Three shares of the new stock will be exchanged for each share of $50 par. New certificates and checks for capital distribution will be mailed or delivered on or after August 15, upon surrender of the old $50 par certificates. No further dividends will be paid on the old stock.

Anglo-Persian

Anglo-Persian Oil Co., Ltd., for nine months ended December 31, 1928, reports net profit of £1,975,657 after depreciation, interest, reserves, etc., equivalent after dividend requirements on first and second preferred stocks to 9.82 per cent on £13,425,000 ordinary stock. Previous report was for year ended March 31, 1928, and showed net profit of £1,859,262 equal to 7.33 per cent on ordinary stock.

Sir John Cadman, chairman of Anglo-Persian Oil Co., Ltd., recalled at the annual meeting he expressed the belief at the last previous annual meeting that 1929 might inaugurate an era of steadily expanding profits. Nearly half the year had gone, he said, and he could safely say that on the basis of existing selling values and operating costs the results, unless something totally unforeseen occurred, would show a substantial increase. Before the close of the year, he said, it should be possible for the company to declare an interim dividend.

Production of Anglo-Persian Oil Co. in the Masjid-i-Sulaiman district during nine months was 4,250,000 metric tons. Great progress has been made in development of the new field Haft Kel, Sir John stated. Six flowing wells have been brought in at relatively shallow depths with aggregate measured yield amounting to about 12,000 metric tons daily. One of the latest wells on 24-hour initial flow yielded 5,000 tons, the largest production for any well yet drilled in Persia. All the wells, of course, have been closed in.

Drilling is actively proceeding on other locations, and the full extent of the structure, which promises to be of important dimensions, is being actively studied. Enough was learned about it in 1928 to justify the area being fully equipped as a producing field, and optimism felt then has been more than confirmed, Sir John remarked. Early in 1930 the pipe line connecting the field with the main line from Masjid-i-Sulaiman to Abadan should be completed.

The company's sales in 1928 continued to increase satisfactorily at home and abroad, and distribution costs have appreciably fallen.

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Saturday, was as follows:

Feb. 9	55.28	April 20	58.46
Feb. 16	55.55	April 27	58.34
Feb. 23	54.92	May 4	59.13
March 2	56.43	May 11	59.75
March 9	55.96	May 18	59.30
March 16	58.63	May 25	57.73
March 23	58.52	June 1	56.45
March 30	58.57	June 8	58.37
April 6	58.26	June 14	57.76
April 13	58.52	June 21	56.76
		June 28	56.70

Barnsdall Corp.

Barnsdall Corp. declared an extra dividend of 25 cents and the regular quarterly of 50 cents on the Class A voting and Class B nonvoting capital stock, payable August 6 to stock of record July 8.

Mexican Seaboard

Recent offering of 248,877 additional shares of Mexican Seaboard Oil Co. capital stock has been subscribed. Stockholders of record May 29 were offered the right to subscribe at $32 a share in the ratio of one share for every four shares held. Rights expired 3 p. m. June 25.

HARRY KERSTETTER DEAD

Harry R. Kerstetter, well-known Tulsa oil man, died June 29 at his home. Mr. Kerstetter lived in Bradford, Pa., until he grew to young manhood and then moved to Lima, Ohio. He had resided in Tulsa since 1909 and operated in the Mid-Continent and Kentucky Fields. He is survived by Mrs. Kerstetter; one son, Frank L. Kerstetter, with the Sinclair Oil & Gas Co., and one daughter, Mrs. W. E. Downing, of Tulsa. The funeral and burial were held in Tulsa Tuesday morning, the Rev. C. W. Kerr, pastor of the First Presbyterian Church, officiating.

GOOD WELL IN OLD FIELD

OIL CITY, Pa., July 1.—One of the largest wells completed in the Venango oil fields in recent years has just been finished in Oil Creek Township, it was learned here today. The well is producing 20 bbls. a day. Robert and George Foggan, Pleasantville, are the owners. The well is in an area opened as an oil field over 65 years ago.

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Kennedy Building, Tulsa, Okla.

1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low	Par value	Stocks	For week ended June 28: Sales	Open	High	Low	Last	Change
$6.75	.45	2 7/8	.55	1 1/2	.53	$5	Amer. Con. Oilfields	3,300	1/2	5/8	7/16	7/16	+ 1/16
..	..	7 1/2	2 3/4	9 1/2	3 1/8	N.P.	Amer. Maracaibo	4,800	..	4	3 3/4	3 7/8	.....
..	..	2 3/4	1	4 1/2	2 1/4	$10	Argo Oil	200	2 1/8	2 1/4	2 1/8	2 1/4	.....
85 1/4	60	40	20 1/2	55	32 3/4	N.P.	British American	No sales.					
28 3/8	9 1/4	28 1/4	15 1/2	4 1/2	3 7/8	25c	Carib. Syndicate (new)	2,000	3 1/4	3 1/4	3	3	— 1/4
..	..	58 3/4	40 1/4	90 7/8	54	$20	Cities Service	No sales.					
..	..	95 5/8	87	103 1/2	94 1/2	100	Cities Service, pfd.	No sales.					
..	..	8 1/8	7 3/8	9 5/8	8 7/8	10	Cities Service, pfd. B	No sales.					
3 1/2	1 3/4	3 7/8	1 1/8	3 1/4	76	1	Colombia Syndicate	1,400	..	1	3/4	7/8	— 1
..	..	9 3/4	6 3/8	8 7/8	6 1/4	10	Consolidated Royal	200	7	7	6 7/8	7	.....
16	10	14 7/8	9 1/2	17 1/2	9 1/2	N.P.	Creole Syndicate	11,300	8 1/8	8 3/4	8	8 1/8	.....
..	..	3	.50	3 1/4	.76	N.P.	Crown Central	400	1 3/4	1 3/4	1 1/2	1 1/2	— 1/8
7 7/8	6 3/4	12	4	33 1/2	3 1/4	N.P.	Darby Petroleum	2,700	14	16	14	15	+ 1/2
..	..	2 1/2	74	2 1/4	1	N.P.	Derby Oil & Refining	10,900	10 7/8	10 7/8	10	10	— 5/8
..	..	16 3/4	4	21 1/8	7 1/2	N.P.	Derby Oil & Refining, pfd.	No sales.					
..	..	2	.40	.53	.15	N.P.	Gilliland ctfs.	No sales.					
98	92	118	86 1/4	165	101 1/8	$25	Gulf Oil Corp.	7,600	172 1/2	174 1/8	170 5/8	172 1/8	+ 1 1/8
$3.00	.83	2 1/2	.80	3 5/8	1	5	Intercontinental Pet.	7,100	1 3/4	1 3/4	1 3/8	1 1/2	— 1/4
..	..	2 1/4	1 1/8	3	1 1/4	N.P.	Kirby Petroleum	100	1 3/4	1 3/4	1 3/4	1 3/4	.....
12 1/4	5 3/4	10 7/8	5 1/8	9 3/8	5 1/8	25	Leonard Oil & Dev.	14,800	4	4 1/2	3 3/8	3 7/8	— 3/8
27	20	27 1/2	20	43 7/8	20	N.P.	Lion Oil & Refining Co.	600	34	34 1/2	33 1/2	34 1/2	+ 2
46	30	59 5/8	37	69 1/8	48 1/2	$25	Lone Star Gas	3,900	82 5/8	87	82 5/8	84 5/8	— 2 3/4
2 7/8	1	2 7/8	.80	1 7/8	.50	1	Magdalena Syndicate	500	76	76	76	76	+ 26
34	12 1/2	52	12	48 1/2	32	N.P.	Margay Oil	No sales.					
8	5 1/2	12 1/8	5	8	2 3/4	N.P.	Mexico-Ohio Oil	No sales.					
1 3/4	1 1/8	1 1/8	1	1 3/4	.76	$1	Mountain & Gulf	600	1	1	7/8	7/8	— 1/8
26	23	29 1/4	22 3/4	28 7/8	19 1/2	10	Mountain Producers	9,800	15	17 3/8	14 7/8	16 1/4	+ 1 5/8
6 5/8	5	5 7/8	4 5/8	5 5/8	4 1/4	5	New Bradford	2,400	3 1/2	3 7/8	3 1/2	3 7/8	+ 3/8
..	..	16	9 1/4	11 7/8	7 1/8	1	New Mex. & Ariz.	100	5 5/8	5 5/8	5 5/8	5 5/8	.....
..	..	12 3/4	9 1/2	14 1/4	8 1/2	N.P.	North Central Texas	2,600	..	16 5/8	10 5/8	11	+ 3/8
10 1/8	5 7/8	9 3/8	3 1/4	6	2 1/8	N.P.	Pandem	900	1 3/4	1 3/4	1 5/8	1 5/8	— 1/8
12 1/4	11 3/4	12 1/8	7	15 5/8	8 1/2	N.P.	Pantepec Oil	400	6 3/4	6 3/4	6 1/4	6 1/4	— 1/4
22 3/4	12	13 1/2	5 1/8	7 3/4	4 7/8	N.P.	Pennok Oil	No sales.					
17	8 1/2	24 3/8	7	18	4 7/8	25	Red Bank Oil	No sales.					
30 1/4	12	15 1/2	3 1/2	12 7/8	4 1/8	N.P.	Reiter-Foster	4,600	5	5 1/8	4 1/2	4 5/8	— 3/8
7	4 1/2	7	4 1/2	12	4 1/8	N.P.	Ryan Consolidated	500	6 1/2	6 7/8	6 1/2	6 1/2	.....
10	7 1/2	8	5 1/4	7 1/4	5 1/2	$10	Salt Creek Cons.	700	3 1/8	3 1/8	3 1/8	3 1/4	.....
35	24 1/8	35 1/2	27 1/4	35	23 1/8	10	Salt Creek Prod.	6,800	18	20 7/8	18	18 3/4	— 1/4
6 7/8	1 1/4	7	1 1/4	3 1/2	1	5	Savoy Oil	No sales.					
27	7 5/8	26 1/2	17	22 7/8	13	10	Tidal Osage	No sales.					
25 3/4	7 5/8	23 3/4	15	21 1/4	13 1/8	10	Tidal Osage, nonvoting	No sales.					
92	63 1/2	92	63 1/2	93 1/4	75	100	Transcontinental, pfd.	100	134 1/2	134 1/2	134 1/2	134 1/2	— 1 1/2
8	4 1/2	7 3/8	4 1/4	9 1/8	4 3/4	5	Venezuelan Petrol	300	4	4	3 7/8	3 7/8	— 1/8
8 1/8	5 1/2	8	4 3/4	8 1/4	4 7/8	$1	Woodley Petroleum	1,500	4 3/4	4 3/4	4 1/8	4 3/4	— 1/8
6 1/2	6	6	1 3/4	8 3/8	2 1/8	25	Y Oil & Gas (new)	No sales.					

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of New York Stock Exchange, Kennedy Building, Tulsa, Okla.

1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low		Listed capital	Par value	Stocks—	Div. rate	Last paid	For week ended June 29 Sales	Open	High	Low	Last	Change
32⅞	24¼	37⅝	27⅝	43⅞	27⅛	(sh)	922,075	N.P.	Amerada Corp.	50cQ	Oct. 31, 28	3,900	24¾	25¾	24½	24¾	+ ¼
74	39⅞	82⅛	35⅛	85	51⅛	(sh)	209,180	N.P.	American Republics Corp.	.....	.....	3,900	46⅝	47⅞	45	47⅞	+ 1⅛
60	44⅜	50¼	35	53⅜	37½		$57,260,300	$25	Associated Oil	50cQ	Dec. 31, 28	6,000	44	45	44¼	44¼	+ ¼
128⅜	97	131⅜	104	66⅜	50		50,000,000	25	Atlantic Refining	25cQ	Dec. 15, 28	194,000	70⅞	73¼	70¾	72⅜	+ 1¾
33½	23½	35½	20¾	53	20		35,194,000	25	Barnsdall Corp.	50cQ	Feb. 5, 29	800	40¾	42½	40¼	41⅞	+ ⅞
94½	50	96⅜	65	94⅞	68		20,785,400	100	General Asphalt	.....	.....	6,600	81½	83½	80½	82	— ½
72	50¼	175⅜	60⅛	167	79		25,000,000	100	Houston Oil	.....	.....	3,900	78¾	81	77	80	+ 1½
34	19⅝	32¾	17⅝	38⅜	21¾	(sh)	959,457	N.P.	Independent Oil & Gas	50cQ	Jan. 31, 29	16,300	34¾	35½	34½	34⅞	+ ¼
12¾	7½	12⅛	7⅝	39⅝	9		8,203,080	$10	Indian Refining	.....	May 31, 24	51,200	45	45⅝	41⅞	44⅜	.....
25⅞	16½	37⅜	20½	39⅛	27⅜	(sh)	3,992,122	N.P.	Lago Oil & Transport	.....	May 1, 27	7,100	33⅞	36	34½	34½	+ 1
19⅞	12	18⅛	10	19¾	9⅜	(sh)	1,237,078	N.P.	Louisiana Oil Refining	.....	.....	8,400	12¾	12¾	12½	12½	.....
28	16½	22¾	12	25½	12½	(sh)	330,000	N.P.	Maracaibo Oil	.....	.....	3,300	14¾	14¾	13½	13⅜	— ¼
63⅜	49¼	58½	31	49¾	33	(sh)	2,316,692	N.P.	Marland Oil Co.	.....	Mar. 31, 27	21,900	35⅝	36	34⅛	35	— 1
13¾	6	9¼	3	73	4⅝	(sh)	945,939	N.P.	Mexican Seaboard	.....	Dec. 15, 20	97,900	47	53	44⅝	53	+ 8¾
37	20½	39⅜	25½	44½	25⅛	(sh)	1,357,461	N.P.	Mid-Continent Petroleum	50cQ	Feb. 15, 29	15,800	33⅞	34	33⅛	33½	— ½
104¼	90	105	97	120½	103¼		$6,718,000	$100	Mid-Continent Petroleum pfd.	$1.75Q	Sept. 1, 28	No sales.					
2½	½	3¾	1⅝	7⅜	2⅜		24,298,850	10	Middle States	.....	July 1, 23	7,600	3⅝	3⅞	3½	3⅝	.....
76½	56⅛	65⅞	40⅛	54⅞	38¼		$48,807,400	$50	Pan American P. & T.	.....	Oct. 20, 27	1,300	54	54½	53	53½	— ½
78⅜	56⅞	66⅜	40¼	58⅞	37⅜		121,097,900	50	Pan American P. & T. B.	.....	Nov. 15, 24	107,800	59	59⅜	55¼	56⅝	— 1⅞
46	30	37⅞	16⅜	28⅜	15½	(sh)	400,000	N.P.	Pan American Western B.	.....	Jan. 30, 27	1,100	14	14	13¾	13¾	— ¾
32	4½	18⅞	8	21¾	11½	(sh)	198,770	N.P.	Panhandle P. & R.	.....	.....	500	10	10	9⅝	9⅝	.....
99⅜	51	83	54	108	70		$2,935,200	$100	Panhandle P. & R. pfd.	.....	July 2, 23	200	60	60	60	60	— 2
57⅜	40	60¼	36¼	53⅞	35¼	(sh)	2,406,796	N.P.	Phillips Petroleum	37½cQ	Jan. 2, 29	12,300	37¾	37¾	36⅞	37¼	— ⅝
....	....	1⅛	½	5¼	½		$29,622,925	$25	Pierce Oil Corp.	.....	.....	6,600	2½	2½	2	2	— ⅛
7	2¼	5½	2½	7	3½	(sh)	2,500,000	N.P.	Pierce Petroleum	.....	.....	3,200	4½	4½	4¼	4⅜	— ¼
60¼	48	55½	45⅝	68	46		60,000,000	25	Prairie Oil & Gas	.....	Aug. 31, 27	9,400	56⅝	56⅝	55½	55½	— 1⅛
137½	122½	190	130⅜	280	172		$101,250,000	$25	Prairie Pipe	75cQ*	Mar. 31, 29	7,100	59⅞	60	59¼	59½	— ⅜
20¾	11	33⅞	16¾	29⅞	16		$37,450,850	$50	Producers & Refiners	.....	Sept. 15, 23	1,400	18¼	19½	18⅛	18½	+ ¼
41¾	30¾	50	36⅞	49⅝	41		2,845,350	50	Producers & Refiners pfd.	.....	May 1, 25	4,000	43	43	41	43	+ 1¼
31	25¼	33½	25	31⅝	19		75,959,350	25	Pure Oil Co.	25cQ	Dec. 1, 28	29,100	27¼	27¼	26⅛	26⅝	— ⅝
27½	22	28⅝	25⅜	56	23		47,025,000	$25	Richfield Oil	.....	Nov. 15, 28	14,900	42	42⅞	41½	42	+ ¼
57⅜	47⅜	54½	44¼	64	44⅝	(sh)	611,303	13.40	Royal Dutch, N. Y. shares	50cQ	Jan. 10, 29	3,500	53⅜	53⅞	52⅛	53	— ½
48⅝	40½	47⅞	41⅜	57½	40⅝	(sh)	£30,000,000	£1	Shell Transport & T.	$1.45	July 23, 28	No sales.					
31	24	31⅜	24⅝	39¼	23¼	(sh)	20,000,000	N.P.	Shell Union Oil	35cQ	Dec. 31, 28	42,100	26¾	27	26¼	26⅝	.....
25⅝	15⅛	26⅜	14¼	27¼	18⅛		$8,357,000	$10	Simms Petroleum	10cQ	Dec. 15, 28	21,100	30	31⅜	30	31	.....
24⅞	16¾	22⅜	15	46¾	17⅜	(sh)	4,501,915	N.P.	Sinclair Consolidated	.....	.....	12,900	36⅝	37¼	35⅛	36¼	— ¼
99½	90	104½	97	110	102½		$16,604,600	$100	Sinclair Consolidated pfd.	$2Q	Nov. 15, 28	No sales.					
37⅛	26⅝	37⅜	24⅛	42⅝	25		27,396,590	25	Skelly Oil Co.	50cQ	Dec. 15, 28	19,100	39¾	41	38½	41	+ ⅝
63⅝	51½	60¾	50⅜	80	53	(sh)	12,594,098	N.P.	Standard Oil of California	65½Q	Dec. 15, 28	39,200	73¾	75⅛	71⅜	72⅝	— ½
46⅜	37½	41⅜	35⅛	59⅜	37¾		$611,120,700	$25	Standard Oil of New Jersey	25cQ*	Dec. 15, 28	129,100	56¾	57⅜	56	57⅜	— ⅝
47¼	30⅜	34⅛	29¾	44¼	28¾		427,973,275	25	Standard Oil of New York	40cQ	Dec. 15, 28	43,100	39⅞	39⅞	38⅞	39⅛	— ½
41⅜	30⅛	34⅞	30	77	31½	(sh)	1,206,073	N.P.	Sun Oil	25cQ	Dec. 15, 28	3,500	64	65⅛	63⅛	65	.....
5¼	1	6½	3⅛	14¼	2½	(sh)	1,267,000	N.P.	Superior Oil Corp.	.....	Dec. 20, 20	62,100	7⅝	54⅞	49⅛	52	+ 1
58	48	58	45	74¾	50		$211,076,650	$25	The Texas Corporation	75cQ	Jan. 1, 29	34,100	61	63	60½	62⅜	+ 1⅛
19½	12	18⅞	12	26⅝	12½		8,380,340	10	Texas Pacific Coal & Oil	.....	Jan. 3, 28	12,500	17⅜	18⅛	17⅜	17¼	— ⅜
39¼	27	29⅛	19	41½	19⅝	(sh)	2,168,410	N.P.	Tide Water Oil Co.	20cQ	Dec. 15, 28	900	34⅜	35	34¼	35	.....
103	87¼	90⅛	85	100⅛	86		$20,705,200	$100	Tide Water Oil Co. 5% pfd.	65½cQ	Dec. 15, 28	1,000	94⅛	94¾	92⅜	92⅝	— 2½
27	20⅞	19⅛	15¾	25	14¾	(sh)	4,796,158	N.P.	Tide Water Associated	.....	Aug. 1, 27	20,600	20	20¼	19½	19⅝	— ¼
5½	3	10⅜	3⅜	14¾	7¼	(sh)	3,742,029	N.P.	Transcontinental Oil	.....	.....	29,400	10⅜	10⅞	10½	10½	— ⅜
58⅜	37¼	56½	39⅝	58	42¾		$94,798,100	$25	Union Oil of California	50cQ	Nov. 10, 28	9,600	49¾	49¾	47⅝	47⅝	+ 1⅞
120⅜	84¼	127½	94	128⅛	110		31,061,200	100	Union Tank Car Co.	$1.25Q	Dec. 1, 28	400	140	148	140	147	+ 5
30⅛	23½	34½	24½	44⅞	26	(sh)	356,000	N.P.	Warner Quinlan	50cQ	Jan. 2, 29	100	31½	33⅜	31	32⅞	+ 1⅜
29¾	25⅛	27½	20	38	20⅛	(sh)	490,000	N.P.	White Eagle Oil & Refining	50cQ	Jan. 20, 29	4,000	33⅞	34	33	34	+ ⅝
									Wilcox Oil & Gas	.....	.....	1,000	20½	20½	20	20	— 1¼

*Also extras. †Ex-dividend.

STANDARD OIL STOCKS ON NEW YORK CURB

21	16	21⅝	17⅞	22⅜	14⅞		£4,126,460	£1	Anglo-American Oil	.....	June 6, 28	1,300	14¾	15	14⅞	15	— ½
....	....	3¾	⅝	5	1¼	(sh)	500,000	N.P.	Atlantic Lobos	.....	.....	200	2	2	2	2	— ½
76	65	69	50	56½	44½		1,000,000	25	Borne Scrymser	$18.A.	Oct. 15, 28	No sales.					
59½	42	60	45	76	53		10,000,000	50	Buckeye Pipe Line	$1Q	Dec. 15, 28	600	68	69⅜	68	69⅜	+ ⅜
82½	65	126	76½	161	117		3,000,000	25½	Chesebrough Mfg.	$1Q	Dec. 28, 28	100	168	168	168	168	— ¼
25⅞	17½	22⅝	16¼	23	16		36,057,840	10	Continental Oil	.....	Dec. 15, 27	25,000	20⅞	21⅜	20	20⅜	— ⅝
137	102	137	89	114	67		1,500,000	50	Cumberland Pipe Line	$1A	Dec. 15, 28	5,000	70	70	70	70	+ 2
63¾	43	68½	47	88	64⅛		5,000,000	100	Eureka Pipe Line	$1Q	Nov. 1, 28	No sales.					
32½	9⅞	13½	3½	13	4¼		16,000,000	100	Galena Signal Oil	.....	June 30, 25	100	5	5	5	5	.....
68½	52	68½	54	114¾	59¼		73,117,577	25	Humble Oil & Refining	30cQ*	Jan. 1, 29	11,100	114½	117¼	113⅝	115	+ ⅛
144½	125⅛	182	123¾	290½	176½		20,000	100	Illinois Pipe Line	10%S.A.	Dec. 15, 28	100	308	308¾	308	308¾	— 1¼
....	....	64¾	37¾	104	56¾	(sh)	6,458,267	N.P.	Imperial of Canada	25cQ	Dec. 1, 28	3,200	27¼	27⅝	26⅞	27	— ⅜
72½	58	94½	61	91⅞	74⅜		$5,000,000	$50	Indiana Pipe Line	$1Q	Feb. 15, 29	300	95⅜	97⅜	97	97	+ 2
35½	28¾	39	28¼	55	35	(sh)	7,123,444	N.P.	International Petroleum	25c	Nov. 30, 28	500	46¼	46¼	46¼	46¼	.....
20¾	12½	24	13½	32⅜	19⅜		$6,363,350	12.50	National Transit Co.	25c	Dec. 15, 28	1,800	22⅜	23½	22⅝	23	+ ⅜
51½	27¼	44½	31¼	75	38½		5,000,000	100	New York Transit	.....	July 15, 26	100	12⅞	12⅞	12⅞	12⅞	+ ⅛
80½	64	100	70	69	56½		2,000,000	50	Northern Pipe Line	$38.A.	Jan. 2, 29	100	54	54⅜	54	54⅜	+ 2¾
67¾	55¾	67⅞	52	84	58½		60,000,000	25	Ohio Oil Co.	50cQ*	Dec. 15, 28	2,200	72¼	72½	71¾	71¾	+ ½
24¾	15	39	12	84	28		10,000,000	25	Penn Mex. Fuel	$1.25	Dec. 15, 28	1,300	26⅞	27½	26	26	+ 1
220	84½	201½	175½	220	167		4,000,000	100	Solar Refining	$58.A.	Dec. 20, 28	600	39	40	39	39½	— ⅛
74½	61½	27¼	15½	19	15		1,000,000	10	Southern Pipe Line	$2	Dec. 1, 27	400	20¼	20⅝	20¼	20⅝	+ ⅝
50	34½	41½	35	71⅞	36⅜		2,000,000	25	South Penn Oil	50cQ	Dec. 31, 28	1,100	52⅝	53⅝	52¼	52¾	— ⅛
56	47½	83	55½	102	70		3,500,000	100	Southwest Pa. Pipe Lines	$1Q	Oct. 1, 28	No sales.					
70½	60½	81½	64⅝	95⅞	70⅞		228,415,463	25	Standard Oil of Indiana	61½Q	Dec. 15, 28	49,670	55¾	56¼	55½	55¾	.....
36½	16½	20⅞	14⅝	37¾	15		8,000,000	25	Standard Oil of Kansas	.....	June 16, 24	900	21¾	21¾	21½	21¾	+ ⅛
134⅜	108	130	111½	179¾	122¼		17,012,559	10	Standard Oil of Kentucky	$1Q	Dec. 31, 28	3,200	36⅝	37⅞	36⅝	37⅝	+ ¼
51⅛	42	49½	40	54⅞	39⅞		4,559,850	25	Standard Oil of Nebraska	63cQ	Dec. 20, 28	100	46¾	47⅝	46¾	47⅝	+ ⅝
372	288	87½	72	134	71		14,000,000	25	Standard Oil of Ohio	62½cQ	Jan. 2, 29	500	120¼	121½	119	121½	+ ½
21	15	21	14½	23½	16		861,000	25	Swan Finch Co.	.....	Nov. 1, 19	No sales.					
109⅜	90¼	....	....	111	72		125,619,000	25	Vacuum Oil	75cQ	Dec. 20, 28	1,900	113⅛	116⅜	113⅛	116⅜	+ 2⅜

*Also extras.

GULF'S HOUSTON OFFICES

HOUSTON, Tex., June 29.—Removal of more than 800 employes of the Gulf Production Co., Gulf Refining Co. and Gulf Pipe Line Co. from their old quarters to the new 37-story Gulf Building directly across the street, was completed the middle of the week without a hitch or an interruption of any of the work of the company. The three companies now are located in 13 floors of the building, which has just been completed. The move occupied about a week with departments being moved at night one at a time.

SALT CREEK LEASES

WASHINGTON, D. C., June 29.—There will be no further investigation of the Salt Creek oil leases according to a statement by Attorney-General William D. Mitchell of the Department of Justice in a letter addressed to Senator Nye of North Dakota, chairman of the Senate committee on public lands and surveys.

"In view of the adverse rulings of the Interior Department," states Attorney-General Mitchell, "no legal basis exists at this time for the institution of actions on the part of the United States."

CHICAGO MARKET IS LOOKING FOR CHANGE

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understanding with his customer before shipping. Some of the oil burner makers or more often the local installers who are responsible for the operation of the burner, will blame the oil if there is trouble and suggest that a test be made. It is best to be on the safe side.

Gas Oils in Rut

Gas oils are in a rut right now. There is about the usual amount of business for the time of the year and some gas companies are willing to take in considerable material at their price. Some refiners who were out of the market now will have a little to offer but they want more than the buyers are willing to pay. Stock reports show there is much material on hand somewhere and of some kind, but when the buyer tries to buy a straight run gas oil that is right in all essentials he finds it is not so easy to find that material. When one refiner is exhausted as a source of supplies another may come forward with an offering but very often there is some distinction that makes it hard to sell the gas oil from the last refiner to customers who have had the product of the former source of supply. Prices are unchanged. The recycled oil is in light demand and is being largely held at the refineries for the coming winter. Deliveries of both gas oil and distillates are being accepted occasionally by distributors and there will be more of this delivering this month. It is not so long now until consumers will be ready to fill their tanks or can be induced to do so. Some of the larger distributors figure that right now is a good time to get ready and some will store during the next 60 days enough furnace oil, chiefly gas oil, to carry them until the early part of next January.

There is little activity in the fuel oil market. The consumption is quite large but chiefly on contracts. Most of these have some time to run but one of the large steel companies is in the market for a contract for one year. Most of these steel buyers are shrewd traders and hard to sell on terms that leave a profit to the refiners.

Supplies of the lighter fuel oils with low sulphur and viscosity are still hard to buy in any quantity and command the recent market prices for these grades. The heavier fuel oils are unchanged though the supply is large and there is a feeling that if there is any weakening it will be in these. So far prices here are rocking along unchanged.

Lubs Quiet

Lubricating oils are very quiet. The demand for motor oils has slowed up considerably and the position of these is right in line with the gasoline situation. Jobbers stocked up liberally and have not been obliged in a general way to reorder. The consumption is large. There is more talk of substituting cheaper oils for the higher qualities and of some blending of cheaper products with bright stocks to reduce the cost of the oil. Mid-Continent bright stocks are firm at the recent advances in prices and the majority of the refiners are sold ahead. Pennsylvania bright stocks are believed by some buyers to have reached their peak as they claim it is easier to buy these goods. Neutrals are showing a little better tone and may be increased in price. Waxes are easy in this market although dealers believe the supplies in consumers' storage are light and that a better business may be looked for in the near future.

Tank Wagon Scale

The only changes in the tank wagon scale have been those caused by increases in the gasoline tax in several states or the imposing of new taxes. In Illinois the new 3-cent tax takes effect on August 1, and may result in some stocking up chiefly by consumers as the dealers will have to pay tax on gasoline in storage. Some of the trade complain that the margin between the actual cost of gasoline and the tank wagon price is approaching the point where there is liable to be some secret rebating if not price cutting. The statement is quite frequently heard that if the refinery market does not hold at the 9¼-cent price which is maintained by the major refiners a tank wagon decline will be needed to prevent price cutting, secret or open.

SUGGEST METHOD IN DETERMINING REVENUE

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finery expenses and is carried as an indirect charge but regardless of where it is carried, it should be included in an analysis such as described here. To arrive at this cost, based on a per barrel of crude, it is simply necessary to multiply the barrels of raw charging stock or the barrels of gasoline made by the amount of the royalty over a month's time and divide this figure by the number of barrels of crude run.

Indirect Charges

At this point the analysis is complete so far as the refinery operation is concerned but there are many indirect expenses that must be included in the problem. By the addition of a cracking unit, the plant investment is proportionately increased, including not only the unit itself but additional tankage, lines, boiler house capacity, power house, etc. This investment calls for a greater outlay as insurance, interest, taxes, etc. In addition depreciation and obsolescence on cracking equipment is high and it is common practice to charge off from 15 to 30 per cent for these factors. Considering then the sale of the products from the plant after adding the cracking facilities, it may be possible to shift the sales effort from selling fuel oil and gas oil to selling gasoline and coke but in some cases the change calls for an increase in the sales personnel. This is particularly true in those cases where the railroad of some other large purchaser takes all or a large portion of the fuel production on contract without any great amount of sales effort involved. Gasoline, being more competitive and with the need to build up a new market it is often necessary to increase the sales personnel.

Another factor which must be considered and might call for an additional investment is the factor of transportation. If the fuel had been disposed of in the railroad cars or was pumped to the consumers' storage, it is likely that new clean cars would have to be purchased. Or, if the old cars could not be cleaned satisfactorily to handle gasoline, some arrangement would have to be made to trade cars.

REFINERS WATCHING OKLAHOMA CITY POOL

(Continued from Page 155)

ritory Illuminating Oil Co. and most of the 25 wells drilling are on their leases. Two pipe lines are taking the crude at present. The Empire Oil & Refining Co. is taking the Indian Territory Illuminating Oil Co.'s crude oil and the Sinclair Crude Oil Purchasing Co. and the Prairie Oil & Gas Co. are taking the Mid-Kansas oil.

FRANK F. SCHAUER IS NOT CUT TO PATTERN

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operation. He declares he went through the University of Pennsylvania, Philadelphia, in one afternoon. (N.B. Checking gas meters.) In like manner he went through Harvard. He seems to find special gratification in the fact that he went through Smith College for Girls.

Something of Mr. Schauer's impatience with customs that have nothing in particular to commend them except "Well, it's the way we've always done it," is seen in his methods of establishing excellent morale in his organization. There is no high-hatting. Having worked his way up from a humble position, he assumes there are potential superintendents, managers, directors and presidents among his subordinates, and his attitude toward them conforms with that assumption. Probably all corporations nowadays recognize the importance of a friendly bearing on the part of employes who come in contact with patrons and prospective patrons. Mr. Schauer goes further and insists that it is useless to expect an employe to maintain a cordial, gracious manner unless he receives square and courteous treatment from the man above him.

Stereotyped business correspondence employing language which the writer would not dream of using in personal conversation finds no favor with Mr. Schauer, who said in this connection:

Why Not Write the Way You Talk?

"If some gas consumer who knew me personally should meet me in the street and make a well-founded complaint about the service he was getting, I'd say, 'Now, Mr. Smith, I'm might sorry you've been inconvenienced that way. I'll make it my business to see just how it happened and I'll do my level best to see that it doesn't happen again. Thank you for telling me.' Why shouldn't I say the same thing in a letter? Why should anybody begin using a lot of stilted expressions immediately after the 'Dear Sir'? Why shouldn't we be ourselves and dictate as though we were talking to a man face to face?"

Commenting on the relations between a public utility and the public and between a public utility's officials and its employes, Mr. Schauer said:

"The first step in establishing satisfactory customer contacts is to develop in each employe a genuine desire to serve the customer promptly and courteously. When I say 'each' I mean not only the man at the counter, the meter reader, the executive, the foreman, etc., but I mean the truck driver, the telephone operator, the street workman, the president and the water boy. If only those in frequent touch with patrons have this desire to please them, then we are like a boat with the men on one side doing all the rowing. The boat goes around in circles and gets nowhere.

"There is no place in the natural gas industry—or any other for that matter—for a grouch. That applies to the boss as well as to the workman. How can we expect a workman to greet a customer with a pleasant 'good morning' if he himself received a sour look from the boss when he reported for work? Good customer relations depend upon good employe relations, and the boss must show a sincere interest in the welfare and happiness of his men. You can't fool the average workman with talk, pretense and insincerity."

NEW COMPANY IN THE OIL EQUIPMENT FIELD

The Kirk-Morrow Iron Works Co., a Kansas corporation newly organized by a group of old oil industry equipment men, on June 19 took over the Iola, Kans., plant of the United Iron Works, Inc. J. B. Kirk, A.S.M.E., a veteran operator in Kansas oil and gas fields, is president of the new company. D. C. Morrow, until recently president and sales manager of the United Iron Works Co., is vice president and general manager.

The new company will manufacture and erect steel tanks and derricks, and will manufacture tank fittings, rig irons, bull and calf wheels, band wheels, crown blocks, tug wheels, sprocket wheels, sand reels, refinery equipment and stills, and will do steel plate construction.

The oil industry equipment warehouses through which the Iola plant has distributed its products are taken over by the new company, together with the manufacturing, sales, field and warehouse personnel intact. The general offices of the Kirk-Morrow Iron Works Co. are at Iola, Kans.; sales offices are maintained at Tulsa, Okla.; Dallas, Tex., and Wichita, Kans. The company has warehouses and stocks of its products at Parco, Casper and Cody, Wyo.; El Dorado, McPherson and Valley Center, Kans.; Tulsa, Seminole, Maud, Sasakwa, Konawa, Oklahoma City, Okla.; Pampa, Panhandle, Borger, Trent, Big Springs, Pyote, Santa Rita, Tex.; Smackover, El Dorado, Ark.; Okotoks, Alberta, Canada.

Under Mr. Morrow, who is in general charge of sales, is a group of men of exceptional experience and ability. W. H. Dwyer, well known in the industry as a specialist in the sale and erection of tanks, is in charge of the Dallas office. H. M. Rosevear is his assistant. F. J. Bradford, for 25 years engaged in the manufacture and sale of rig iron equipment, is in the Tulsa office. His assistant is V. H. Van Horn. L. B. Chevalier, A.S.M.E., for 14 years with the Iola plant, and Russell Harry, also a long-time member of the factory organization, remain with the new company as works manager and purchasing agent, respectively.

The Iola plant of the United Iron Works, now the factory of the Kirk-Morrow Iron Works Co., was founded on a small scale 25 years ago. In the course of years it developed into an important industry, doing a business of $3,580,000 in the active oil year of 1927 and $3,000,000 in 1928. The Kirk-Morrow company has 140 men on the shop pay roll at present and expects soon to double this force.

ROCKY MOUNTAIN AREA

(Continued from Page 154)

well on Section 31-35-1 and the Ellis sand came in at 1,440 feet. The Clyde Oil Co.'s well drilled into the Ellis sand on Section 34-35-3 and will make an average producer.

The well of the U. S. Petroleum Co. on the Black Horse Dome near Great Falls is underreaming and preparing to set small casing to make a production test. The Lone Star Oil Co.'s well in the same area is drilling about 800 feet. The Cypress Oil Co.'s wildcat on the Goosebill is underreaming and is having trouble with cave. The Monalta Oil Co.'s well on the Blarney Castle Dome near the Canadian border and northwest of the Sunburst Field, Section 1-37-4, had a gas showing at 500 feet and is drilling at 1,422 feet after a shutdown.

ROCKY MOUNTAIN FIELDS
Daily Average Pipe Line Runs Week Ending June 29

WYOMING	
Salt Creek	30,860
Frannie	30
Big Muddy	2,270
Oregon Basin	4,300
Byron	....
Dutton	30
Elk Basin	750
Ferris	....
Grass Creek	2,320
Greybull	....
Hamilton	1,000
LaBarge	2,080
Lance Creek	220
Lost Soldier	3,920
Osage	560
Poison Spider	940
Rock River	2,270
Rex Lake	100
Lander	360
Simpson Ridge	60
Teapot Dome	30
Mule Creek	800
Total	52,900
MONTANA	
Cat Creek	1,450
Kevin-Sunburst	6,860
Pondera	3,170
Lake Basin	90
Total	11,570
COLORADO	
Moffat	1,619
Fort Collins	2,506
Florence	963
Iles	1,852
Tow Creek	465
Boulder	25
Rangely	100
Total	7,530
NEW MEXICO	
Artesia	825
Cap Rock (Maljamar)	454
Hogback	170
Rattlesnake	....
Table Mesa	119
Total	1,568
Grand total	73,568

SHELL PIPE LINE STATEMENT

The Shell Pipe Line Corp.'s runs and shipments for the month of May (Oklahoma, Kansas and Texas crude oil) follow: Runs 3,330,306.49 bbls., daily average 107,429 bbls.; shipments 3,287,486 bbls., a daily average 106,048 bbls.

Brief Items for Petroleum Refiners

Export Association Opposed to Advance In Foreign Prices

NEW YORK, July 1.—There will be no advance in the price of export gasoline from American ports at the present time, according to action taken at the meeting of the Export Petroleum Association in the board room of the Standard Oil Co. of New Jersey on Thursday, June 27.

The meeting was preceded by publication of an interview with Richard Airey, president of the Asiatic Petroleum Corp., a subsidiary of the Royal Dutch-Shell interests, in which he declared that he believed it was "contrary to fact in the industry to change the price basis on export gasoline in the face of the week-by-week increase in oil production to new high levels."

This comment was occasioned by the calling to Mr. Airey's attention of a statement made in London by Viscount Bearstead, chairman of Shell Trading Transport Corp., Ltd., to the effect that the Export Petroleum Association "is not an instrument for raising prices."

Continuing his reasons for opposing at this time an advance in export gasoline prices, Mr. Airey states: "Curtailment of production plans have broken down in the United States; wide open conditions of output are prevailing in all of the principal oil fields of this nation; yet the proposal is made to increase the export price. It is contrary to good business practice. If the price is raised now, it will have to come down again. In the meantime losses will be sustained by storage costs and evaporation and the repercussion on individual companies may be severe.

"Of still greater moment is the possibility that distrust and lack of confidence in the American oil industry may spring up in consuming markets of Europe. The matter must be looked at from the view of the buyer in London, Paris, Berlin, or other European cities.

"The Export Petroleum Association was created not as a monopoly or a price raising agency but as a stabilizing influence in the interests of the people, the companies and the stockholders in those companies.

"With mounting production, in excess of requirements, it may be possible to hold supplies off the market for a time in the interests of orderly marketing, but supply and demand balance will return untimately and the market might be seriously broken."

Under the rule of the Export Petroleum Association, all such changes affecting the industry must be sustained by a 100 per cent vote. It is understood that aside from Mr. Airey's attitude, several other companies were of the same opinion, and for that reason the meeting was one of unusual importance.

Montague's Statement

After the meeting, which occupied about three hours' time, an official statement was issued by Gilbert H. Montague, vice president and counsel of the Export Petroleum Association, as follows:

"The Export Petroleum Association, Inc., following its customary procedure in all matters regarding gasoline export prices, recently appointed a committee of its member companies to investigate and report back to the association the committee's recommendations on this subject.

"At its meeting today the association voted that this export price committee should continue its investigation of the gasoline situation and that action by the association regarding gasoline export prices should be deferred until after this committee had reported back to the as-

(Continued on Page 175)

COMMITTEE PLANS TO PREPARE SPECIFICATIONS ON PRODUCTS

ATLANTIC CITY, N. J., June 29.—Meeting here this week in connection with the annual meeting of the American Society for Testing Materials, Committee D-2 on Petroleum Products and Lubricants perfected plans that have been under consideration for some time for undertaking the preparation of specifications for certain petroleum products.

Changes in the by-laws of the committee were adopted, these providing for the appointment of technical committees to prepare specifications on specific products. The changes, however, first must be confirmed by letter ballot.

In organizing these technical committees, attempts will be made to obtain adequate representation from all interested groups and, in the beginning at least, the members of a technical committee will not necessarily have to be members of Committee D-2 or of the American Society for Testing Materials.

This represents a new line of activity for Committee D-2, which hitherto has restricted itself largely to development of methods of testing. It is probable that one or more technical committees will be organized in the near future.

Recommend Changes

Recommendations for important changes in tentative methods of testing certain petroleum products were made by Committee D-2. The committee report, as adopted by the society, recommended important changes in the Tentative Method of Test for Sulphur in Naphthas and Illuminating Oils (D 90-26 T) and in the Tentative Method of Test for Precipitation Number of Lubricating Oils (D 91-21 T) and proposed a new Tentative Method of Test for the Determination of Expressible Oil and Moisture in Paraffin Waxes.

Minor tentative revisions of four standard methods also were recommended. These methods are:

Standard Method of Test for Viscosity of Petroleum Products and Lubricants (D 88-26).

Standard Method of Test for Distillation of Gasoline, Naphtha, Kerosene and Similar Petroleum Products (D 86-27).

Standard Method of Test for Water in Petroleum Products and Other Bituminous Materials (D 95-28).

Standard Method of Test for Carbon Residue of Petroleum Products (Conradson Carbon Residue), (D 189-28).

In the sulphur method, the apparatus and the procedure have been specified more closely in order that more uniform and more accurate results may be obtained. The title of the method also has been changed to "Tentative Method of Test for Sulphur in Motor Fuels, Naphthas and Illuminating Oils (Lamp Method)."

The new method for Expressible Oil and Moisture in Paraffin Waxes represents a standardization of the well-known press method for this purpose. The report also contains summaries of the activities of various subcommittees. That on the work of the Subcommittee on Crankcase Dilution describes methods that are being investigated for determining the dilution of crankcase oil and presents comparative results obtained with them. It is probable that a new tentative method will result from this work.

A weakness of the Tentative Method of Test for Precipitation Number of Lubricating Oils (D 91-21 T) has been the lack of adequate standardization of the precipitation naphtha so that reproducible results could be obtained. This situation has been remedied through the work of Subcommittee IX on Precipitation Number of the A.S.T.M. Committee D-2 on Petroleum Products and Lubricants. Dr. L. W. Parsons, of the Tide Water Oil Co., is chairman of the subcommittee.

Naphtha Specifications

The new specification for this naphtha, as contained in the report of Committee D-2 adopted by the society, is as follows:

Gravity, degrees A.P.I., at 60 degrees Fahrenheit, 70 to 73.

Aniline point, degrees Centigrade, 58 to 60.

Initial boiling point, A.S.T.M., not less than 122 degrees Fahrenheit (50 degrees Centigrade).

Fifty per cent point, A.S.T.M., 158 to

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START CONSTRUCTION AT NEW MUSKEGON REFINERY

MUSKEGON, Mich., June 29.—Workers have broken ground for the erection of the Old Dutch Refining Co.'s 3,000-bbl. refining plant, the third to start construction in the Muskegon, Mich., Field.

Several carloads of materials for the plant have arrived in Muskegon and are now being unloaded from the new 1,000-foot siding erected by the Grand Trunk Western Railway Co. on whose line the plant is to be located east of the city limits of Muskegon.

E. G. Guy, former secretary of the Orient Petroleum Co., Wichita Falls, Tex., has charge of erection of the plant and will superintend its operation when completed. It is planned to start operating by September 1.

Officers of the company are: President, Walter Schuttler; vice president and general manager, Walter E. Anderson; vice president, Ernest L. Hughes; and secretary-treasurer, John Borden. All of the officers are Chicago business men and each holds a one-fourth interest in the $500,000 authorized and paid in capital of the corporation. About $300,000 will be expended for erection of the plant and the rest will be used for operating capital.

TIDE WATER BUYS STATIONS

The Tide Water Oil Sales Corp., which is the sales subsidiary of the Tide Water Oil Co., has purchased the station properties of the Chastain Oil Co. of Tulsa. The company operated a bulk station and two large drive-in stations in the Tulsa business section. The purchase marks the entry of the Tide Water company in the Tulsa retail market.

The Tide Water company also has acquired the properties of the Gray Eagle Oil Co. of Muskogee, Okla. These properties consist of bulk and service stations. The company in the past year has acquired a number of stations in the Ozark region of Missouri.

FORMS EUROPEAN SUBSIDIARY

CHICAGO, June 27.—The General American Car Co. has organized an European subsidiary to operate cars in Germany and the Balkan States. A holding company will also be organized in Switzerland to own the controlling interest in the foreign subsidiaries of the General American Car Co.

CORDELL RESIGNS

O. L. Cordell, vice president in charge of sales for the Independent Oil & Gas Co., resigned effective July 1. Mr. Cordell will devote his entire time to private affairs.

NEW TYPE OF CONTRACTS FOR PENNSYLVANIA CRUDE

OIL CITY, Pa., July 1.—The Sinclair Refining Co. has issued a new division order which is expected to have some effect on crude oil marketing conditions in the Allegany Field soon. The Sinclair company is a large buyer of Pennsylvania grade crude oil which is refined at its Wellsville, N. Y., refinery. The refinery is now being enlarged. The new order is to the effect that the company in replacing its crude contracts in the fall will reserve the right to accept not more than one and one-half times the production of the contracting concern or individual last year. The Vacuum Oil Co. has also decreed that it will not agree to buy more than 25 per cent above last year's figures. The other big buyer in the field, the Tide Water Oil Co., does not have contracts maturing in the fall and so no action is expected to be taken by it.

The possibility of a lessened market which is hinted at in the action of the Sinclair and Vacuum has had the effect of making many of the operators go a little slower in their drilling than would have otherwise been the case. In case these indications of reduced takings of crude are put into effect, the condition will be more serious than it has been in the Bradford Field. In the latter a considerable market has been found in the Oil City and Warren refining district. The Allegany crude has a darker color than the Bradford article and is not as popular with the refineries in the Oil City-Warren territory for that reason.

DIXIE JOBBERS ROUNDUP

CHICAGO, June 27.—The annual roundup of the members of the various state associations of the Dixie Jobbers was held at St. Joseph, Mich., this week. There was a large attendance, each state organization being representsed by several of the personnel of the concerns which compose the organizations. The first day was devoted to meetings of the members which were held behind closed doors and of which no report was made.

It was stated that there was nothing new developed but that the membership was pleased with the progress made by the organization. The second day was devoted to having a good time including a golf tournament and other athletic features. Lunch was served at the golf club and a banquet at the hotel in the evening closed the roundup. Several of the active oil men from Chicago and other points were present as guests of the Thiesen-Clemens Oil Co.

PARAGON ENLARGES OFFICE

The Paragon Refining Co. is building a $50,000 addition to its general office building located at 2935 Front Street, Toledo. The building is on the same site as the refinery. The enlargement of the office building was necessary to take care of the enlarged retail marketing activities of the company. The latest acquisitions of the company were the 18 filling stations of the Cadillac Petroleum Co. in Detroit and 35 stations of the Indian Oil Products Co. in Cleveland, Ohio.

CUNNINGHAM TO BARTLESVILLE

H. Roy Cunningham, formerly of the Tulsa office of the Phillips Petroleum Co., has been placed in charge of the Oklahoma marketing division of the company. Headquarters for the division have been established in the Pemberton Building at Bartlesville, Okla., where the general offices of the company are located.

BEAM PUMPING OF LARGE CAPACITY WELLS

(Continued from Page 39)

danger of parting tubing will become unduly great.

Submergence and Back Pressure

As mentioned earlier, pump submergence and back pressure in a well are factors of opposite effect which must be carefully weighed in making pump selection. For example, 2½-inch pump might require a 250-pound per square inch submergence to operate at highest efficiency, and this efficiency might be necessary before the pump would lift the full production of a given well. On the other hand, a 250-pound per square inch submergence pressure might easily be enough to reduce the inflow of fluid to the casing so that the well would no longer produce at its maximum rate. Installation of a larger pump to operate with less submergence, but possibly at lower volumetric efficiency, would reduce the back pressure on the formation and thus increase the inflow of fluid into the well as well as the daily production.

Production graphs of wells in Poso Creek and Inglewood Fields showed how experimenting with larger size pumps increased productions of wells in which smaller size pumps were producing at or near their maximum theoretical capacities. One increased in production from 550 bbls. per day to 1,000 bbls per day when the 3-inch pump was replaced with a 4-inch pump. Without allowing for stretch of tubing and rods during the pumping stroke, the volumetric efficiency was practically the same with both pumps, and a further increase in pump size, if such had been possible and practicable, might have increased production further. Another graph illustrated the effect of increasing pump size from 2½ inches to 3 inches in an Inglewood Field well that was oxertaxing the capacity of the smaller pump. Computation shows that the 2½-inch pump was operating at nearly 100 per cent volumetric efficiency, but a 3-inch pump only had to operate at about 77 per cent efficiency in order to lift the total production of the well. This change in efficiency indicates that the productive limit of the well was about 650 bbls. per day, that this was too much for a 2½-inch pump, but that a 3-inch pump was adapted to this particular well.

Clearance between the outside or shell of the pump and the casing may exert some influence on pump efficiency. Small clearance has the effect of preventing fluid that enters the well at levels above the pump from falling to the bottom of the pump fast enough to allow the barrel to fill on each plunger stroke. This condition is aggravated in a well that produces gas in appreciable volume. Gas not only tends to prevent oil from falling down past the tubing and pump, but separation of oil from gas is doubtless incomplete at best and encourages gas-locking of the pump.

Size of Oil String

While the factors that have just been discussed all affect pump efficiency, and therefore should be carefully weighed by the operator, the size of the oil string determines the maximum size of pump that can be used in a well, and this factor more often than not results in final selection of the pump size.

The maximum allowable size of tubing and pump commensurate with safe practice is that size which not only has a reasonable factor of safety in the tensile strength of the tubing joints but which can be "washed over" if it should become "sanded up" in a well. Many deep wells in California are completed with 5¾-inch A.P.I. oil strings, the internal diameter of which is 4.99 inches. The largest size of tubing that can be washed over in 5¾-inch casing is 2-inch external upset which, using a factor of safety of 3, has a tensile strength of joint equivalent to a string 6,243 feet in length. At least one large California operator has decided that it is necessary to use 2½-inch upset tubing to provide enough pump capacity to insure maximum well production. This size has practically the same tensile strength as 2-inch upset tubing, but cannot be washed over. Another major operator has deviated even further from safe practice because of desire to increase pump capacity and runs 3-inch plain tubing to great depth in 5¾-inch casing. This tubing has a tensile strength of joint, using a factor of safety of 3, equivalent to a string of only 4,308 feet, and besides this weakness it cannot be washed over.

Long strings of large diameter tubing can only be used safely in wells with oil strings of large diameter, as for example, 6⅝-inch A.P.I. casing. Tubing up to 3-inch A.P.I. upset, can be run in 6⅝-inch A.P.I. casing and still be washed over in the event a fishing job becomes necessary.

No mention has been made of decreasing the pump size when the well production is known to be low. The advantages of lower cost of tubing and pumps and of lighter pumping loads may be considerable. Operators, however, are inclined

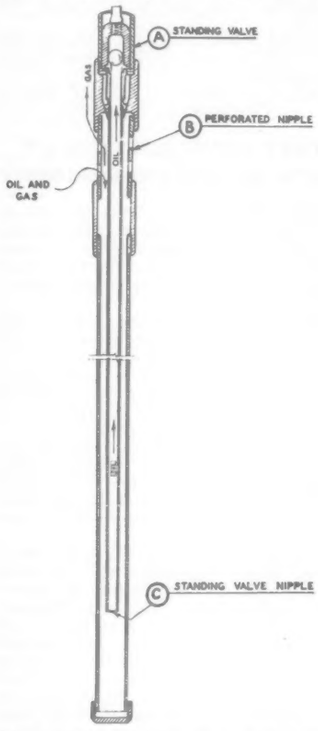


Figure 2—Sketch of gas anchor with common entrance and exit for gas.

to balance the advantages of standardization against these factors favoring smaller size pumps and for that reason many pumps with capacities greatly exceeding the output of the wells are in regular service.

Type of Pump

Choice of the proper type of pump is probably as important as selection of the proper size. The choice of type may be difficult because of the wide variation in operating conditions at individual wells. Judgment based on experience with producing wells under different conditions of operation is, of course, the best guide. However, a short discussion will be given of the general adaptability of different types of pumps and their advantages and disadvantages under certain conditions.

The fluid sealed plunger type pump has a smaller displacement than liner pumps of the same nominal rating because it uses three telescoping tubes of comparatively loose fit which occupy more space than the single plunger. Nevertheless, this type of pump is often valuable in securing maximum production because, due to the loose fitting tubes that comprise the plunger, it wears very slowly, even in wells that produce large amounts of sand and gritty sediment with the oil. It is also adapted for use in wells that produce both sand and water, and for that reason are very destructive to ordinary liner pumps. In fact, the fluid sealed type pump will frequently operate satisfactorily and without shut downs where a tight fitting steel or cup plunger will wear so rapidly that the time lost in changing pumps seriously reduces well production.

The extent to which idle time may reduce production over a given period such as a month, is clearly illustrated in Figure 1, which compares production with a fluid sealed plunger and a tight fitting plunger from a well that produced oil with a large sand content. The graph shows that although the tight fitting plunger pump produced at a greater rate while actually operating than the fluid packed type, it was idle so much of the time that the average production over a period of a month was lower.

Pumps with tight fitting plungers, whether of metal or composition cups, have greater displacement than any of the three general types of pumps described in this paper, and if well conditions are suitable, these can be expected to pump more fluid than other pumps of the same nominal rating. The metal plunger type of liner barrel is commonly used in California. The plunger "fit" is the important feature of these pumps and is determined by judgment of the production foreman based on his experience.

The American Petroleum Institute, in standardizing on working barrels and pump parts, standardized on plunger fits and designations for steel plungers to be used in standard machined working barrels. This table of standards, which is given below, does not assist the foreman in choosing the right plunger fit for any well, but it does insure his selection of a plunger of certain clearance regardless of the make of the pump.

Designation of Fits of Polished Plungers for Machined Working Barrels*

(All dimensions in inches)

Size of Plunger A. P. I. Designation	2"	2½"	3"	4"
— ½	1.7495	2.2495	2.7495	3.7495
—1	1.749	2.249	2.749	2.749
—1½	1.7485	2.2485	2.7485	3.7485
—2	1.748	2.248	2.748	3.748
—3	1.747	2.247	2.747	3.747
—4	1.746	2.246	2.746	3.746
—5	1.745	2.245	2.745	3.745
—6	1.744	2.244	2.744	2.744
—0	1.750	2.250	2.750	3.750
+1	1.751	2.251	2.751	3.751
+2	1.752	2.252	2.752	3.752
+3	1.753	2.253	2.753	3.753

*See A.P.I. Stds. No. 11-E, First Edition, January, 1929, "Working Barrel Pump Parts," page 23, issued by A.P.I., Division of Standardization, 1508 Kirby Building, Dallas, Tex.

Such factors as quality of oil, presence of water, sand or mud, and the temperature of the fluid, which factor usually increases with depth, all influence the field man in choice of fit of a plunger. It is generally accepted that in wells which produce high gravity oil or water, a plunger of comparatively tight fit will be required to prevent slippage of fluid past the plunger. Heavy or viscous oil, sand, mud and high temperature are factors which influence a selection towards "loose" fit. Although it has been commonly supposed that rather tight fits were necessary to insure good pump efficiency because of slippage past loose fitting plungers, this point may be debatable. A number of production engineers have recently questioned the principle that slippage takes place even past plungers of loose fit, as for example, 0.003 or 0.004 inch, to an exent that would seriously impair pump efficiency. Small slippage through the narrow annular spaces of a fluid sealed pump support this view for the annular space represented by clearance between a+1 plunger and a standard A.P.I. working barrel is much smaller than between tubes of the fluid sealed pump, and besides would be so small that frictional resistance to fluid movement past the plunger would be tremendous.

Shop Tests

Much could be learned by laboratory or shop tests on pumps where conditions of fit and temperature (which affects fit), viscosity of fluid and plunger stroke, were known. At present foremen generally select the closest fitting plunger that can be run without danger of sticking when in the well. An experienced operator can tell by gripping the polished rod whether the plunger is moving freely, although recently weight indicating devices which give charts of load and even plunger movement have been designed to aid the operator in his choice of fit.

The inserted barrel type of oil well pump has recently come into great favor in California. It is merely a tight fitting plunger pump made to run inside the tubing on the sucker rods and seat in a special shoe in the tubing. Conversely, the entire pump is pulled with the sucker rods. The plungers of the inserted barrels in common use are usually equipped with cups only, but a combination plunger with cast iron sleeve and cups is valuable in wells which produce much water. This pump has greater capacity than the fluid sealed pump but less than the standard liner barrel pump. Its advantage is that the pump can be replaced with a rod pulling operation, thus reducing the time a well must be off production for pump trouble. The reduction in off time will frequently offset the smaller capacity of the pump, and moreover only a comparatively few wells have productive capacities that exceed the capacity of, say, a 2½-inch inserted pump. Insert type pumps with cup plungers, therefore, are adapted to wells of productive capacities somewhat under the theoretical capacities of the size that can be run, and to wells that produce fluid comparatively free of sand or grit.

Valves

Of special attachments for pumps, valves that are designed to be operated mechanically with each plunger stroke are probably the most useful, although no valves of this type are in very general use, which in itself suggests that such valves are not outstandingly successful. If valve action can be accelerated, the effective length of pump stroke will be increased. This is particularly noticeable when pumping viscous oil, and some positive active valves are used in the California "heavy oil" fields.

The use of special valves to prevent a pump from becoming gas locked is discouraged by most operators. They find that the proper way to gas proof a pump is to reduce the clearance space between traveling valves and standing valve to a minimum. This is done by using a lower traveling valve (plunger bottom valve) and spacing the plunger as low as possible. With a small clearance the gas that comes through the standing valve is compressed sufficiently to open the traveling valve and no automatic attachments are needed. Small clearance then will prevent a pump from becoming permanently gas locked, but gas locking may be responsible for a considerably reduced pump capacity due to failure of the pump to fill with fluid on each stroke.

As suggested in an earlier part of this paper, it is important, particularly in low head wells, to select a pump of size and construction that has the largest possible openings through the valves, as these reduce fluid friction and tend to cause the pump to fill more rapidly and therefore more completely on the suction stroke.

Light balls are desirable because they raise more quickly under low heads and also are slower in pounding out seats. Hollow balls would be useful but to date none of perfect roundness and balance has been developed. Hollow plumb bob type valves are available and may be found useful in certain kinds of wells.

Balls and seats are constructed of various materials. Material has no bearing on the problem of obtaining maximum production except as it is affected by wear. The longest wearing balls and seats will be slowest to develop leaks and will cause the least idle time for replacements, and consequently their use will be reflected by a greater production over a period of months.

The use of long cages to give a high lift to the ball is discouraged by most operators, particularly when pumping comparatively light and gassy oil. The balls pound out the seats and roll out the wings of the cages. Production men

have learned from experience that this pounding action is considerably more pronounced when much gas is present. A high lift of the ball also reduces the effective plunger travel. A cage with wings long enough to permit the ball to lift until the area between the ball and seat for the passage of fluid is slightly greater than the area of the seat opening, is enough for ordinary pumping conditions. Long cages are useful, however, in pumping heavy viscous oil in wells where the pump is run at comparatively low speeds.

Gas Anchors

The effect of entrained gas on the volumetric efficiency of a working barrel has been discussed above, and the importance of excluding gas from the barrel cannot be too greatly emphasized. It must be realized, however, that while gas may be detrimental to pump action, and therefore efficiency, it lightens the fluid column in the tubing and is a very useful agent in serving the pumping equipment once it has passed through the pump. Most operators use some form of "gas anchor" to separate entrained gas from the oil before the oil enters the pump.

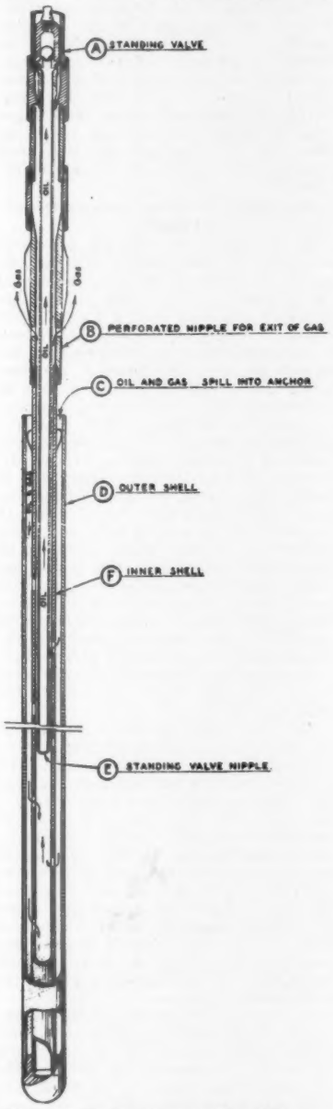

A STANDING VALVE
B PERFORATED NIPPLE FOR EXIT OF GAS
C OIL AND GAS SPILL INTO ANCHOR
D OUTER SHELL
F INNER SHELL
E STANDING VALVE NIPPLE

Figure 3—Sketch of gas anchor with separate entrance and exit for gas.

Anchors are designed to provide a pump with a suction chamber that is always filled with oil from which the entrained gas has been liberated. The gas so liberated escapes at the top of the anchor and moves upward through the casing where it may be drawn off directly into the gasoline plant gathering system, or where it may be reintroduced to the oil in the lead line to be separated again in the trap.

Gas anchors depend on a gravity separation of gas and oil. The ideal gas anchor, therefore, is a chamber with the working barrel at the bottom, and extending up to the top of the fluid, as such design would provide the maximum distance for the oil to travel downward while separating from the gas, and also would allow the pump to fill under greatest pressure. The ideal gas anchor would also provide for the entrance of gas and oil to the anchor under the lowest possible pressure as a minimum volume of gas would then be in solution. Under such circumstances, most of the entrained gas would have separated from the oil before it entered the anchor. This ideal type of anchor is not often practical, however, because of the limitation in size imposed by the oil string. Thus, most gas anchors in common use are suspended below the standing valve. The simplest type of gas anchor consists of a joint of tubing screwed into the bottom collar of the pump, with perforations just below the pump, and extending into the tubing is a piece of smaller pipe screwed into the standing valve body. See Figure 2. Oil and gas enter the anchor through the perforations in the outside shell of the anchor, and the oil passes downward to the bottom of the smaller tube. Gas which is liberated during the downward movement of the oil rises and passes out through the perforations into the well. The effectiveness of this type of anchor depends largely upon its size. If the downward movement of the oil is comparatively slow, a good separation will be obtained, due to the great difference in densities of oil and gas. One operator has concluded, as a result of laboratory tests, that "this downward velocity should be less than the rate of rise through oil of even the smallest gas bubbles." The same operator, who has demonstrated the increased effectiveness of large anchors over smaller ones in many producing wells, has supplied the following well data to support his contentions:

Well	Average gross production—bbls. 2½-inch Anchor	3-inch Anchor	Increased prodn. with large anchor Barrels	Per Cent
1	156	178	22	14
2	19	49	30	158
3	167	192	25	15
4	156	258	102	65
5	24	46	22	92
6	242	318	76	31
7	154	187	33	21
8	61	129	68	111
9	102	125	23	23
10	200	237	37	18

Special Type Anchor

Another more special type of gas anchor, which is in common use in California, is shown in Figure 3. This anchor differs from the one previously discussed in that it provides openings for escape of the gas entirely separate from the openings for entrance of the oil and gas. Also, it has two chambers for the oil to spill into, instead of one. The extra chamber gives it the added size that was found desirable in the ten wells listed in the above tabulation. Production was increased from several wells by installing this type of gas anchor. No other change was made which would account for the increased production. The production of another well was increased slightly by installing the gas anchor and raising the pump some 363 feet above its former level. Experience has shown that in order to increase production, it is often necessary to raise the pump when a gas anchor is installed because of the different conditions under which the pump operates. A pump must be set deep in the fluid when operating without an anchor so that the oil and gas may separate, in so far as possible, in the annular space between tubing and casing. When using a gas anchor, however, pumping will usually be more successful if the gas anchor is set close to the operating fluid level, i. e., the fluid level while the well is pumping. The gas has a free exit from the oil in the anchor. If the anchor is deeply submerged in fluid its efficiency in separating oil and gas may be greatly impaired, and it may be found that the pump will fill with the gassy fluid that does not separate because of the pressure.

Pumping Speed and Length of Stroke

The variables that enter into the problem of obtaining maximum well productions with beam pumping are so numerous that it is impossible to set definite rules to govern such factors as speed and length of stroke. Such variables as temperature and viscosity of the fluid being pumped, submergence, quantity of gas, as well as the type and size of the plunger and valves, all bear on the problem. It is safe to say that an operator has only a general idea of what is happening in the pump, and he has become accustomed to finding by experiment the best speed and stroke for a given tubing depth and size of pump in each well. Experience has shown, too, that the best combinations of speed and stroke may vary within rather narrow limits.

It would seem that the productive capacity of a pump could be increased by increasing the plunger travel and speed, and therefore the displacement. This assumption is not always borne out in practice. Results often show, for example, that more fluid is produced from certain wells when pumping in the third hole of the crank than the fourth. The most probable explanation of this is that the increased plunger speed when operating with a long stroke shortens the period during which the valves must act, and this prevents a complete filling of the barrel with fluid. For this reason, it is extremely important that the pumping speed does not exceed that which gives ample time for valve action. Experiments conducted on several pumping wells disclosed the fact that fluid production could be varied by changing the counterbalancing effect, even though no change had been made in the polished rod speed or stroke. Later, graphs taken by the dynamotograph used in conjunction with these tests, showed that the change in counterbalancing varied the cycle of plunger movement, and that increased production was obtained when the counterbalance was so adjusted that the plunger movement was slowed down at the bottom and top of the stroke, thus giving a longer time for opening and closing of the valves.

The effects of counterbalancing on two wells, as shown by the oil production and by the dynamotograph, are given in the following tabulation:

Type Pump	Counterbalance	Fluid Production	Dynamotograph Observations
(Fluid)	None	88 bbls. per day	
(Packed) (Plunger)	Rotary type	142 bbls. per day	Eight per cent increased plunger stroke and increased time for valve action
(Cup)	2,500-lb. Pitman	76 bbls. per day	Plunger stroke same as before,
(Plunger)	6,000-lb. Pitman	111 bbls. per day	but 15 per cent increased time for valve action

Effect of Casing Head Pressure

It has been pointed out that the inflow of fluid to a well can be increased by reducing the back pressure on the producing formation. For this reason, when maximum fluid production is desired, regardless of the gas-oil ratio, casing head pressures are held at the lowest possible levels. Casinghead pressure ordinarily tends to accentuate gas locking of pumps.

There is one period in the life of an oil well, however, when casinghead pressure may help to increase production. Wells frequently stop flowing while still large potential producers. Because of the volume of gas produced at this period, they may be extremely difficult to pump successfully, and even though the gas could be trapped by an anchor so that the pump will operate satisfactorily, its capacity will often be less than the potential capacity of the well. If some casing pressure is held, wells of this type can be agitated with a pump and caused to flow through the pump at a much greater rate than that indicated by the theoretical capacity of the pump. The gas anchor should be left off when agitating a well of this kind. The pump should be operated with a fairly rapid motion to keep the fluid and gas stirred up. The exact amount of casing pressure necessary for maximum production must be found by experiment. Many wells will flow through the casing while pumping and agitating if the casing is not closed in completely. Wells have been known to produce as much as 1,000 bbls. of oil and water per day when pumped in this manner with a 2½-inch inserted type pump, the maximum plunger displacement of which was only 415 bbls. per day.

A serious problem now being met in handling pumping wells is that of maintaining maximum fluid production while reducing gas production. Experience has shown that this can usually be accomplished by the holding of the right amount of casinghead pressure. In fact, tests on many pumping wells have shown that if a certain amount of casing pressure is being held, the gas production may be reduced without appreciable loss in fluid production. At present the maximum amount of pressure which can be held on the casing without loss of fluid production must be determined by experiment, but it is probable that if information could be obtained to permit a study of the relation of so-called "rock" pressures and well back pressures, it would be found that the proper back pressure would bear a somewhat constant relation to formation pressure.

The maximum allowable back pressure may be dependent to a certain extent on the pump level because the back pressure may depress the fluid level until it is below the pump. Gas will then blow through the pump and no fluid will be produced.

The results one operator obtained from tests on five wells are summarized in the following tabulation:

Well	(1)	(2)	(3)	(4)	(5)
A	2,250	2,450	200	20	25
B	1,700	2,340	640	40	44
C	1,650	2,050	400	25	30
D	1,500	2,155	655	80	18
E	1,460	2,045	585	75	44

(1) Standing fluid level (feet). (2) Pump depth (feet). (3) Depth of pump below standing fluid level (feet). (4) Maximum casing pressure without loss in fluid production (pounds per square inch). (5) Reduction in gas production (per cent).

These results show that the greatest casing pressure could be held without loss of oil production on those wells in which the pumps were set farthest below the standing fluid level. Also, the greatest reduction in gas production and gas-oil ratio was obtained in these same wells.

The depth at which the pump is set in a well, commonly referred to as "tubing depth," is one of the most important factors in securing maximum production with beam pumping. As mentioned previously, a pump must be set deep enough to have proper submergence in order to operate efficiently, and if it is set either deeper or shallower than this proper point it will handle less fluid, with the result that the fluid level will rise in the well and exert a higher back pressure on the formation. Production graphs on various wells illustrated this point clearly. Some wells tubed higher and others tubed lower showed similar increases in production. It is possible to tube a well too deep. In January and February the pump was set in one well at 3,910 feet, and the well produced about 150 bbls. per day. On February 25 tubing was raised to 3,752 feet and production increased to 160 bbls. per dy. On March 5 a third change was made, the pump being lowered back to 3,864 feet and production increased to 175 bbls. per day. Lowering tubing only 36 feet in one well caused an increase in production of about 100 bbls. per day. Such results as these demonstrate that it is as easy to tube a well too deep as too shallow, and that small changes in tubing depth are very important.

Three Methods Used

Three methods are used by field men to determine the proper tubing depth. The most common one is the trial method. The fluid level is determined and the

pump is set a short distance below that level. The well is then pumped and fluid production gauged. If the production man is persistent, he repeatedly lowers tubing short distances and gauges production at each setting. Usually the production at each successive lower depth will increase until the most favorable point has been passed. The pump is then pulled back to this point and the well pumped at that level until the foreman against suspects that it is not producing at its maximum rate because of improper tubing depth. The experimental period will vary from two days to two weeks, depending on conditions in the well and the foreman's personal judgment and interest.

The second method of determining proper tubing depth requires the use of a pressure bailer or "depth bomb." The points of entry of gas and oil into the casing have considerable bearing on the problem of best tubing depth, and if the "gas zone" can be found by means of a pressure bailer and the pump set below this zone, the pump will usually recover more oil. By using pressure bailers or depth bombs, a well may be surveyed for fluid pressure from top to bottom and a curve of pressure and depth plotted. Careful analysis of the curve will disclose the probable points of entry of greatest volume of gas. The pump must then be set below these points to give submergence in fluid that is not lightened with gas. Having a pressure depth curve, it may be difficult without experimentation to analyze it for proper pump depth. A combination of two methods may be used to find the proper submergence for a particular kind of pump. For a particular kind of oil, or say in a certain field, the most favorable pump depth may be found by trial, and the submergence pressure at that depth may be observed on the pressure curve. This pressure is then the indication of the proper submergence for that particular kind of pump. Thus, the pressure survey method depends on trial first to determine the best submergence for each type of pump, but having that information, the operator, by observing a pressure depth curve, may choose the proper pump depth without loss of time and labor for further experimenting.

Pressure-depth graphs of two wells surveyed with a pressure bailer were studied. One graph showed that the upper 1,200 feet of fluid was very gassy and that the probable entry point of most of the gas was near the top of the perforated pipe. Before making this study, the pump had been set at 4,075 feet. The submergence pressure at this depth was greater than was thought necessary, so the pump was raised to 3,875 feet. It was still below the entry point of gas and production increased from 300 to 400 bbls. per day.

In one case the pressure-depth graph indicated that gas was present in the top part of the fluid and that good submergence for the type of pump in use would be found at 3,670 feet. Tubing was raised from 4,010 feet to 3,670 feet, and fluid production increased from 266 to 400 bbls. per day. The same type of pump set at the same submergence pressure was used in each case with similar results. The productive limit of the pumps was reached after these changes were made, and it is probable that if installation of larger pumps had been practical, production would have increased even further.

Recording Gas Meter

The third method of finding proper pump depth is useful only in fields where considerable gas is produced with the oil. This method consists of varying the tubing depth until the point is found at which steady production of oil and gas results. A recording gas meter is required with this method. A steady flow of gas through the casing will indicate proper and continuous separation of gas and oil in the well and will also indicate that the pump has sufficient submergence to operate efficiently and thus keep the fluid at a constant level. This is learned from a gas meter chart, which will show whether the gas is collecting in the pump and the tubing and blowing out by heads or whether it is blowing from the casing at a fairly constant rate. Gas meter charts indicated the gas production of one well on 12 successive days. Tubing was set at 3,546 feet on the first day, and lowered repeatedly until finally set at 3,937 feet on the eighth day. The chart on the ninth day showed that the pump was commencing to produce steadily so the depth was not changed further. Charts for the tenth, eleventh and twelfth days show that gas production increased steadily until it reached a maximum. Corresponding increases in fluid production confirmed the operator's opinion that the proper pump depth had been reached.

ECONOMICAL OPERATION OF SMALL OIL WELLS

(Continued from Page 40)

volumetric efficiency of the pump barrel was still too low the pumping speed was cut to seven-tenths of a stroke per minute. It then produced 4.2 bbls. of oil and 4.8 bbls. of water. The operation of the unit was without trouble until March 21 last, when the valves balled up. The well was washed out and operations were resumed until April 4 when the valves again balled up. The pump was pulled and a friction garbutt rod installed and to date the well has given no further trouble. Attention is called to the fact that in spite of the extremely low speed at which the well is being pumped, practically a full 100 per cent volumetric efficiency is obtained.

Intermittent Pumping

A very decided advance over the old methods of head well pumping is that of intermittent pumping as developed by the Union Oil Co., at Brea, Calif., and the Chanslor-Canfield Midway Oil Co. at Torrance, Calif.

Two intermitters were designed and built. Both are operated by telechron clock movements, and both will control the pumping time in any half-hour interval, although they are quite different in design.

The clock movement is a synchronous motor operated from the 110 volt circuit. The contactors on the timer operate the magnetic relay switch which controls the line-start motors. The intermitter may be installed in a few moments on any line-start motor controlled by a magnetic switch.

These were all small wells producing from 20 to 50 bbls. daily. The pumping speed was from fifteen to twenty-five 32-inch strokes per minute. The most notable result of these tests is a reduction of 40 per cent to 65 per cent in the power consumption, by the intermittent pumping compared to continuous pumping. No data are available as to the reduction in other operating costs, but it is evident the wear on all equipment should be reduced in proportion to the time pumped. The volumetric efficiency was practically doubled in all cases, by intermittent pumping, but it was still objectionably low, not exceeding 20 per cent in any case. No material increase in production was noted. It is believed sufficient data have been secured to draw the following generalized conclusions:

Conclusions

1. On wells previously pumped 24 hours the intermitter will not, in most cases, show any increase in production.

2. On wells previously pumped part time, such as 4, 8 or 12 hours, the intermitter will, for the same pumping time, usually show a material increase in production.

3. The intermitter will save power and maintain production on any well showing a tendency to pump off.

4. It has been noted that on wells pumping by heads, considerable difficulty is experienced with the burning of the packing in the stuffing box. This is practically eliminated when the wells are pumped intermittently, due to the presence of fluid at the head when the wells are not completely pumped off.

5. The time interval of pumping and rest is controlled by the following factors:

(a) Rate of flow into the tubing.

(b) Tendency of well to sand up. (Wells pumping much sand should not be off more than one-half to one hour.)

(c) Condition of standing valve. (A leaky standing valve will give the fluid a chance to leak back, thus the time on may be used principally for filling the tubing instead of production.)

6. The most practical time intervals seem to be as follows:

One-half hour on, and one-half hour off.
One hour on, and one hour off.
One-half hour on, and one hour off.
One hour on, and one-half hour off.

It is evident that intermittent pumping partially fulfills the requirements of our basic theory of lifting oil, developed in this report. The most efficient fluid level is maintained for a greater proportion of the time, than when pumped continuously, but as no material production increase is obtained, it is probable much of the gas in the formation escapes into the well near the end of the pumping period, when the fluid is lowered and the face of the oil sand is exposed.

As intermittent pumping does not propose any reduction in the pumping speed of the well, the rate of plunger displacement during the pumping period is very much greater than the maximum rate of migration from the formation. Consequently, an unnecessarily high pressure differential is created between the inside and outside of the pump barrel, resulting in excessive volumetric expansion of the gas and oil mixture in the barrel.

The most logical application of this method of intermittent pumping is during that period in the life of a well, when the production rate falls below the minimum pumping speed of existing equipment, but is not low enough to warrant the installation of modern, slow-speed, constant velocity pumping equipment.

Jack Line Pumping

In order to obviate the necessity of motors for each well, certain groups of wells are placed on jack lines. The jack plants or power plants are centrally located and the rods on each well tend to balance the rods on the well opposite. Thus, certain power economies are effected.

There are two major objections to the installation of jack lines: One is that about 80 per cent of the cost of installation is labor cost, hence, when a property is abandoned the salvage return is very low. As the cost per well hookup is between $700 and $1,600 and a good individual pumping unit with a much higher salvage value can be obtained as cheaply, this becomes a material factor for consideration.

Another objection to the average jack line hookup is its inflexibility. That is to say, all wells controlled by any one jack plant are pumped at the same number of strokes per minute regardless of their individual requirements. This is contrary to the economical operation of a property as it is seldom that two wells will respond to identical treatment. Each well seems to have more vagaries than an army mule.

The engineers of the Union Oil Co. have attacked this problem of inflexibility by the installation of a two-unit jack system. The unit consists of a shaft and crank mounted on concrete supports, chain driven from a double reduction gear, which is in turn directly connected to a 10-horsepower motor. The unit is mounted midway between the two wells, and directly in line. Old sucker rods are used as pull lines.

The jacks are straightline motion with adjustable stroke lengths from 1 to 4 feet. The counterbalances on the jacks are concrete blocks weighing approximately 1,100 pounds, the idea being to counterbalance part of the weight of the rods at the jack and counterbalance the live loads of the wells against each other.

Power Cost Low

The results obtained show the power cost to be exceedingly low for this type of equipment, the watt hour meter showing only 8-horsepower per hour for both wells.

The cost of the complete system is about $2,000. Of this amount $800 may be said to be intangible investment (labor, concrete foundations, etc.). The remaining $1,200 is in material that may be salvaged.

The advantages of this system seem to be as follows:

1. Low first cost ($1,000 per well).
2. Low maintenance cost.
3. Small power consumption (4-horsepower per well).
4. Flexibility (as compared to the central power).

(a) Speed variable on each two wells.
(b) Stroke variable on each well.
(c) Lends itself to an expanding field by requiring only two wells per unit.

The writer wishes here to call attention to the fact that if the pumping speed on this system was reduced, the volumetric efficiency of the pump barrels would show a corresponding increase.

If this speed were cut enough to permit a volumetric efficiency of 100 per cent, it would obviate the necessity of using the oil column in one well as a counterbalance to the oil column in the other.

Slow Speed, Constant Velocity Cycle Pumping

In attempting to develop apparatus which would fulfill all of the requirements of our basic theory of lifting oil as furnished in this paper, it was immediately apparent that a 100 per cent constant velocity cycle was mechanically impossible, due to the necessity for accelerating and decelerating the well loads. However, after several months of preliminary study and design, a pumping unit was developed which gives approximately 80 per cent of the plunger travel at constant velocity, without dynamic loading on the rods beyond that in the crankpin cycle. Tests have been conducted with these units for the past 18 months, and the results have been very satisfactory. Some of these tests have already been discussed in this paper, but there remains one test of particular interest to the producer of low gravity, viscous oils, pumping large quantities of sand. This test definitely disproves the time-honored theory that it is necessary to produce great quantities of sand with the oil, in order to get the oil into the well.

This test was conducted on Chanslor-Canfield Midway Oil Co.'s No. 7, Section 22, Township 31s, Range 22e, Midway district. This well was being pumped by a 25-horsepower gas engine from a depth of 1,300 feet, and at a speed of twenty-two 24-inch strokes per minute. The production was 11 bbls. daily of 13 degree gravity oil carrying 32 per cent sand. Expensive cleaning out jobs were frequent as two weeks' operation under this method would pull sufficient excess sand into the well to fill it to the pump barrel. Also the wear and tear on pumping equipment was excessive due to the high pumping speed.

A slow-speed, constant velocity pumping unit was installed and operated with a 2-horsepower electric motor at a speed of two 36-inch strokes per minute. The production was raised to 32 bbls. daily with only 8 per cent sand. It was noted the sand produced was very fine and was readily carried in suspension in the oil, while most of the sand produced by the old method, together with all of the sand bailed from the well when cleaning out, was very much coarser. From the results obtained it was evident that this finer sand was washed from the voids of the coarser grained sands and that these coarser grained sands left remaining in the formation offered no serious impediment to the flow of oil to the well. Also, by the retention of the coarse grained sand in the formation the caving of the formation was entirely eliminated.

After three months' operation at the slow speed, the tubing was pulled, and the well was found open to the bottom indicating the slow-speed, constant velocity cycle, did not pull excess sand into the well, and the pump readily handled the finer sand which was naturally carried in suspension in the oil. The same

pump remained on the well throughout this test, and the balls and seats showed practically no wear.

Pulling and Cleaning Out

Operations—When the old band wheel equipment is replaced by the more economical individual pumping units, the rigs are "bobtailed." That is, the standard cable end is removed leaving only the tower. This necessitates the use of a portable outfit for pulling and cleaning out operations. There are many of these outfits on the market ranging all the way from a power winch on a truck to massive units capable of handling the deepest of small wells. The trend in pulling and cleaning out operation is, as in other phases of production, towards greater economy of operation. A notable example of this trend was recently brought to the writer's attention by the production engineers of the Union Oil Co.

The engine clutch control lever was moved to a position alongside of the bull wheel brake lever, thus enabling one man to operate both clutch and brake. This arrangement not only saves one man but permits of greater speed through the more perfect co-ordination of clutch and brake. A high-speed drum was installed on the bullwheels to give greater cable speed.

At the same time a "Rod Rat Hole" was drilled. This is a 90-foot hole cased with 30-inch corrugated iron pipe. Over the top of the hole is a head made to act as a rod rack. The top of this rack is at the same level as the top of the tubing.

When pulling the rods one man wrenches the rod and guides it into the rat hole, setting it on the rack and unhooking the elevators. This arrangement eliminates the derrick man.

The weight of a stand of rods is on the hook on the return trip, hence greatly increasing the speed of the hook when returning for the next stand.

With the above described equipment it is possible for two men to pull a 3,500-foot string of three-quarters-inch rods in 50 minutes. With the old style equipment it takes four men one hour and 10 minutes to do the same job.

The cost of this equipment is not excessive.

MARKETING FACILITIES EXPAND IN TULSA

(Continued from Page 37)

in connection with the state tax of 4 cents a gallon. Both estimates are based on May reports which are considered average for the entire year. The summer consumption is higher than in May but during the winter months it will average under the May figure.

The consumption of lubricating oils is based on an estimate that lubricating oil sales will average 2.75 per cent of the gasoline sales. The per cent of lubricating oil sales at oil stations has decreased in Tulsa as in many other parts of the country. This is due to the fact that many cars are now run 1,000 or more miles before the crank case oil is changed with no oil added between changes. There is the additional fact that many car owners now have their oil changed at garages and service stations of automobile dealers. The local marketing companies generally sell this oil to the garages and dealers but not at service station prices.

In addition to the lubricating oil sales there are the grease sales. The quantity of grease sales per station varies widely but it is estimated for an average figure that the grease sales will not exceed 6 per cent of the lubricating oil sales.

An average gasoline consumption for Tulsa of 70,000 gallons daily means that 25,550,000 gallons will be consumed this year. Gasoline retails in Tulsa at the present time over a price range of 11 to 17 cents, not including the 4-cent state tax. Exclusive of the tax it is estimated that the retail prices will average 15 cents a gallon. This would mean that the total gross revenue from gasoline for the year will total $3,832,000.

On the 2.75 per cent basis the sale of lubricating oils will total 702,625 gallons. The average retail price is between 25 and 30 cents a quart. In addition to the nationally advertised oils which retail from 30 to 40 cents a quart, there are a number of smaller marketers who are now selling their oils at 30 cents a quart. Taking these variations in prices into consideration it is estimated that the gross revenue from lubricating oils and greases will total $800,000 for the year. Adding this to the gasoline revenue and it is estimated that the gross return from the sale of gasoline (exclusive of tax) lubricating oils and greases will total $4,632,000. To this might be added the sales of kerosene which in Tulsa are so small as to be of no consequence.

From these data it is apparent that the total investment in bulk and retail stations in Tulsa exceeds the gross revenue derived from the sale of products. This is in contrast to the usual situation in merchandizing staple commodities in which the yearly gross revenue is several times greater than the investment.

Labor Costs

To the return on the large investment must be added a relatively high labor cost considering the quantity of merchandise handled. The minimum for a drive-in station in Tulsa is a man and a half a day. In this arrangement a third man splits his time between two stations each of which has a full-time employe. Porter service has become common in Tulsa even among the smaller sations and this requires additional labor in many stations.

Among the larger stations the number of men will run from four to eight men daily. It is estimated that the average employment at drive-in stations is in excess of two men. In addition to the regular station employes there are the supervisors, office force and miscellaneous employes whose time is charged to the marketing department. It is estimated that the total labor cost for marketing companies in Tulsa will total around $900,000 yearly. This estimate does not include labor costs in the operation of curb pumps.

A return of 6 per cent on the investment would mean a yearly return of $312,000. Thus the charge for labor and investment return alone is $1,312,000, or almost 5 cents per gallon on the yearly gallonage. No attempt will be made to estimate the remaining charges which can be properly credited to the marketing operation. These include station maintenance, light, heat, water, transportation and other items which in the aggregate constitute a large operating charge.

PANHANDLE FIELDS

(Continued from Page 66)

Estracado Oil Co. and others' No. 2 Prideaux had an initial production of 8 bbls. at 639-51 feet. Fain-McGaha and Humble Oil & Refining Co.'s No. 3 Logan was dry and abandoned at 1,165 feet. Grebin's No. 1 Graham was dry and abandoned at 1,502 feet. Madden's No. 18 Richardson was shot with 5, 10 and 12 quarts at 1,284-1,303 feet and had an initial production of 24 bbls. after having been drilled to a total depth of 1,303 feet. Petroleum Production Co. and others' No. 3 Kunkel had an initial production of 215 bbls. at 1,164½-84 feet.

Clay County

Mid-Continent Holding Co.'s No. 1 Stine and others' had an initial production of 32 bbls. at 1,731-63 feet.

Cooke County

Lloyd Oil Corp.'s No. 1 Stark was dry and abandoned at 1,783 feet. Fain-McGaha Oil Corp.'s No. 1 Huggins had an initial production of 220 bbls. oil and 15 bbls. water at 1,181-90 feet.

Jack County

Doran and others' No. 1 Moore was dry and abandoned at 560 feet. F. H. E. Oil Co.'s No. 2 Leffel-Box had an initial production of 691 bbls. at 3,042-54 feet and was drilled to a total depth of 3,085 feet. Their No. 3 Leffel-Box made 175 bbls. at 3,050-83 feet and was drilled to a total depth of 3,088 feet.

Wilbarger County

Consolidated Oil Co.'s No. 1 Waggoner-D was dry and abandoned at 1,896 feet. Its No. 1-B Waggoner was dry and abandoned at 1,931 feet. Empire Gas & Fuel Co.'s No. 11 Waggoner had an initial production of 100 bbls. at 1,821-40 feet. Its No. 12 Waggoner had an initial production of 110 bbls. at 2,287-2,302 feet. Its No. 5 Waggoner had an initial production of 138 bbls. at 1,889-1,901 feet. Fain-McGaha Oil Corp.'s No. 6 Waggoner had an initial production of 10 bbls. at 2,400-05 feet. Its No. 8 Waggoner made 87 bbls. at 2,323-30 feet and was drilled to a total depth of 2,337 feet. Grayback Development Co.'s No. 2 Boggy Creek Waggoner made 300 bbls. at 1,852-67 feet and was drilled to a total depth of 1,867 feet. King Royalty Co.'s No. 1 Waggoner made 250 bbls. at 1,861-76 feet. Knight's No. 3 Waggoner made 165 bbls. at 1,854-74 feet. Its No. 1 Waggoner made 250 bbls. at 1,857-75 feet. Staley Wynne & Co.'s No. 4 Waggoner made 125 bbls. at 1,892-1,906 feet.

Wichita County

Bullington and others' No. 4 Jennings was dry and abandoned at 1,832 feet. Hammon's No. 9 Mitchell made 51 bbls. at 1,815½-17½ feet. Hines' No. 6 Burnett made 65 bbls. at 1,403-87 feet. Mrs. R. A. Laning's No. 10 McCarty was dry and abandoned at 1,757 feet.

Young County

Bratcher's No. 9 Edwards had an initail production of 10 bbls. at 458-502 feet. Carpenter's No. 1 Barrett had an initial production of 20 bbls. at 595-607 feet. Continental and Burton's No. 1 Morrison was dry and abandoned at 982 feet. Dixon and others' No. 1 Cardwell was dry and abandoned at 1,040 feet. Kleiner and others' No. 29 Langston had an initial production of 70 bbls. at 517-46 feet. Their No. 30 Langston made 60 bbls. at 517-83 feet. Robertson Drilling Co.'s No. 6 Gillmore had an initial production of 7 bbls. at 571-93 feet. Their No. 7 Gillmore was dry and abandoned at 590 feet. Steed & Gans' No. 1 Blackman was dry and abandoned at 657 feet. Strahan's No. 1 Boone was dry and abandoned at 550 feet. Wise & Jackson's No. 9 Calvin had an initial production of 5 bbls. at 629-37 feet. Their No. 1 Prideaux was dry and abandoned at 730 feet. Canyon Oil & Gas Co.'s No. 1 Graham made 10 bbls. oil and a little water at 2,173-83 feet.

Haskell County

Superior Oil Corp.'s No. 4 Reynolds had an initial production of 54 bbls. at 1,790-99 feet.

RANGER COMPLETIONS

Week Ended June 29

Brown County

Brider, trustee, No. 4 Cross had an initial production of 120 bbls. at 1,132-42 feet and was drilled to a total depth of 1,144 feet. Cranfill & Reynolds' No. 1 Robertson was dry and abandoned at 1,380 feet. Humble Oil & Refining Co.'s No. 19 Armstrong had an initial production of 44 bbls. after having been shot with 20 quarts at 1,205-11 feet. Evans' No. 1 Martin heirs had an initial production of 60 bbls. oil and 500,000 feet of gas at 972-82 feet and was drilled to a total depth of 984 feet.

Coleman County

Clark, Cowden and others' No. 1 Webb was dry and abandoned at 2,510 feet. Eastland Oil Co.'s No. 3-B Morris topped the pay at 1,980-87 feet, made 8,000,000 feet of gas, was drilled to a total depth of 2,002 feet and had an initial production of 400 bbls. Roth & Faurot's No. 4 Stevens was dry and abandoned at 2,185 feet. Stout & Preston's No. 1 Goodwin had an initial production of 3 bbls. at 913-21 feet and was drilled to a total depth of 926 feet. Vaughn and others' No. 1 Vaughn was dry and abandoned at 972 feet.

Callahan County

Barnhart's No. 2 McFarland was dry and abandoned at 1,036 feet. Bradstreet & Holden's No. 13 Miller had an initial production of 35 bbls. after having a 30-quart shot at 1,628-59 feet and being drilled to a total depth of 1,663 feet. Holden and others' No. 1 Cavanaugh had an initial production of 75 bbls. at 1,654-69 feet. Stalken Oil Co.'s No. 1 Howell was dry and abandoned at 1,628 feet.

Eastland County

Conway Brothers & Champion's No. 4 Simmons was dry and abandoned at 1,161 feet. Lewis & Moore and others' No. 2 Foster had an initial production of 115 bbls. after having been shot with 15 quarts at 1,250-94 feet. Belvo Oil Co.'s No. 7 Good had an initial production of 25 bbls. after having been shot with 7 quarts at 3,649-64 feet.

Erath County

Associated Production Co.'s No. 1 Evatt was drilled to a total depth of 3,704 feet, plugged back to 3,337 feet, shot with 50 quarts at 3,280-3,337 feet and had an initial production of 711,828 feet of gas.

Palo Pinto County

Ashe Syndicate's No. 2 Hart made 40 bbls. oil and 5,500,000 feet of gas at 3,942-44 feet and was drilled to a total depth of 3,944 feet.

Stephens County

Midwest Exploration Co.'s No. 1 Dannehold was dry and abandoned at 3,492 feet. T. P. Coal & Oil Co.'s No. 4 Pierce made 10 bbls. after having been shot with 15 quarts at 1,990-2,013 feet.

Shackelford County

Albany Oil Co.'s No. 1 Reynolds was dry and abandoned at 1,285 feet. Combest and others' No. 3 Matthews was dry and abandoned at 1,249 feet. Cranfill & Reynolds' No. 1-B Diller Brothers was dry and abandoned at 900 feet after having an oil show at 835-42 feet. Manning and others' No. 3 Moberly had an initial production of 6 bbls. at 922-967 feet. McMeans' No. 1 L. D. Crow was dry and abandoned at 606 feet. Their No. 1 T. J. Crow was dry and abandoned at 590 feet. Roeser & Pendleton and Marland's No. 6-A-88 Cook had an initial production of 375 bbls. oil and 15,000,000 feet of gas at 1,373-84 feet.

PANHANDLE COMPLETIONS

Week Ended June 29

Carson County

Champlin Refining Co.'s No. 3 J. W. McConnell was drilled to a total depth of 3,317 feet, shot with 40 quarts at 3,072-93 feet and had an initial production of 70 bbls. Ware and others' No. 1 fee was dry and abandoned at 5,141 feet.

Gray County

Barnsdall Oil Co.'s No. 1 M. B. Davis, located NW cor. of W half of Section 9, Block 1, A.C.H.&B. Survey, had an oil show at 2,820-32 feet and was dry and abandoned at 3,010 feet. Cockrell-McIlroy's No. 2 McConnell, located Section 174, Block 3, I.&G.N.R.R. Survey, found granite wash at 3,152-90 feet, was drilled to a total depth of 3,252 feet and had an initial production of 60 bbls. Magnolia Petroleum Co.'s No. 3 J. B. Bowers, found the granite wash at 3,020-35 feet, was deepened from 2,990 to 3,035 feet and had an initial production of 100 bbls. Shamrock Oil Co.'s No. 1 W. S. Clayton, located Section 50, Block 25, had an initial production of 800 bbls. oil and 4,000,000 feet of gas at 2,805-11 feet. The Texas Company's No. 6 J. B. Bowers made 196 bbls. at 2,890-95 feet and 2,846-54 feet and 2,856-70 feet and was drilled to a total depth of 2,975 feet. Gulf Production Co.'s No. 1 Jackson, located in Section 62, Block B-2, H.&G.N. R.R. Survey, made 950 bbls. in 24 hours at 2,635-2,968 feet.

Wheeler County

Martin & Debons' No. 1 R. Griswold had an initial production of 37,000,000 feet of gas at 1,710-1,906 feet.

Carson County

Gulf Production Co.'s No. 1 Black made 265 bbls. in 24 hours at 3,035-3,117 feet. Its No. 6 Noel was drilled to a total depth of 3,048 feet, topped the pay at 3,170-75 feet and had an initial production of 250 bbls. in 18 hours.

U. OF T. OFFICES IN SAN ANGELO

Geological and mineralogical headquarters for the University of Texas are to be opened in San Angelo, with Dr. H. P. Bybee in charge. Doctor Bybee has been head of the geological department for the Dixie Oil Co. in San Angelo for the past four years. Frank Friend, who was recently appointed to survey university lands, will also make his headquarters in this new office. Plans for the office are now being worked out by Dr. E. H. Sellards of Austin, associate director of the Bureau of Economic Geology of the University of Texas, and Doctor Bybee.

RESULTS OF TESTS OF ALUMINUM TANK

(Continued from Page 38)

the vapors, and sulphur in an elementary state.

This mixture of precipitates and sulphur burned readily under the heat produced by focusing the rays of the sun upon it through a reading glass. It could also be ignited by applying the flame of a match to a piece of it.

This deposit was noticeable particularly along the seams of the deck where the rubber gasket extended from under the metal.

The bolts and deck rafters were not affected in any way noticeable to field inspection.

The side sheets of the all aluminum tank were also carefully examined for corrosion and nothing was found, not even in that zone extending up from the bottom about 6 inches where corrosion had been particularly rapid in steel tanks in this same battery, during the test period.

The side sheets showed numerous spots of some bright substance clinging to them which apparently were tiny pieces of elementary sulphur.

It might be mentioned here that sulphur in this form is not corrosive and does not change its character until heat is applied.

The bottom of this tank was very closely examined by all the men present and reactions were noticeable over all parts of it, apparently caused by bits of iron sulphide scale falling and resting upon the aluminum sheets forming the tank bottom.

Dark spots were also noticeable on the bottom, and in a part of those dark areas immediately under that portion of the tank where the oil and water had entered there were blisters and pits in the metal.

Apparently small particles of iron sulphide scale had rested upon the bottom and formed an electric couple, with the water and bottom sediment acting as the electrolyte.

This first reaction seemed to break down the outer surface of the aluminum and then a second action took place which caused some form of white powder to be deposited within the blister formed by the first reaction between iron sulphide and aluminum.

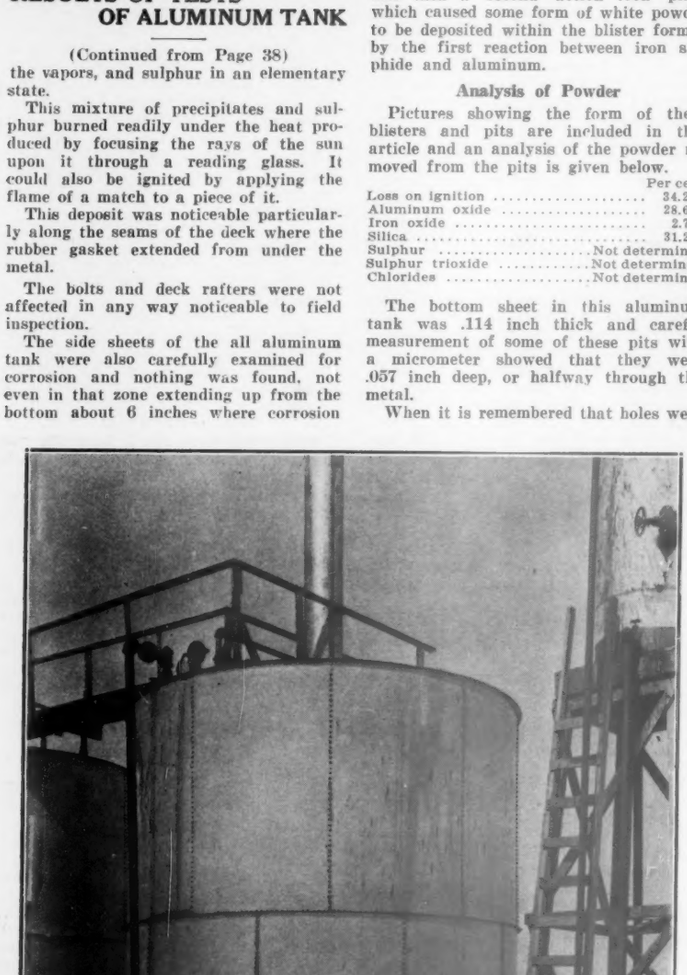
Analysis of Powder

Pictures showing the form of these blisters and pits are included in this article and an analysis of the powder removed from the pits is given below.

	Per cent
Loss on ignition	34.2
Aluminum oxide	28.6
Iron oxide	2.7
Silica	31.2
Sulphur	Not determined
Sulphur trioxide	Not determined
Chlorides	Not determined

The bottom sheet in this aluminum tank was .114 inch thick and careful measurement of some of these pits with a micrometer showed that they were .057 inch deep, or halfway through the metal.

When it is remembered that holes were eaten entirely through 12 gauge (.109 inch) thick steel tanks in the same battery in less than six months, the aluminum has shown very good results and it is conservatively estimated that it should still continue to handle oil for another six months or perhaps longer.



Aluminum tank in State-Lassiter lease battery in Crane County, Texas, after one year's use.

The source of the iron sulphide scale was traceable to three places—material carried into the tank from the well and pipe line between well and tank; from a steel gauging well placed in this tank for about four months and badly corroded when removed; and some steel bolts that had been used in place of aluminum bolts in fastening the aluminum body of a pressure gauge to the aluminum manhole dome cover plate.

The scale from the first source is probably negligible, but quite an appreciable amount of iron sulphide was formed from the last two sources as witnessed by the badly corroded condition of both the pipe and the bolts that had been exposed to the oil and vapors.

The gauging well was removed September 1, 1928, and the bolts were changed when the tank was examined in April and again returned to service, so the only remaining source of scale for the remainder of the test period will be from the well.

The aluminum bolts and nuts in all parts of this tank seemed to have resisted corrosion very satisfactorily, and this is also true of the angle rafters and channels used inside the tank.

The exterior of the tank was also quite bright, and this is worthy of consideration for steel tanks in that area have been showing evidence of rather rapid rusting on the outside due, perhaps, to the formation of considerable volumes of sulphur dioxide made by burning large quantities of hydrogen sulphide laden gas in an atmosphere somewhat more humid than usual because of more rainfall last year in that area.

After the inspection was completed April 15, the side sheet and the deck were replaced and the tank again put into service handling production direct from the well.

Portion of upper ring of side sheets and deck of aluminum tank after one year's service on State-Lassiter lease.

Analysis Composite Tank

Examination of the composite tank, half steel and half aluminum, was also made on April 15 and done in much the same manner as followed in examining the all-aluminum tank except that one side sheet only was removed and the deck was not disturbed.

The upper part of the tank that is made of aluminum showed no evidence of corrosion of any kind and the lower ring and bottom which were made of steel showed very little corrosion.

The bottom showed pits in the area under the gauging well that was hung through the thief hole opening in the deck. In this tank, however, the pipe or gauging well did not show the corrosion that was so marked in the aluminum tank gauging well, and this gives some means of comparing the corrosive effect of the fluids and gas handled by the respective tanks.

The pitted area on the steel tank bottom was not as large as that in the aluminum tank, and the pits did not appear to be as deep but there had been some corrosion of the nuts on the wrought iron tank bolts in the bottom in this area.

The balance of the steel tank bottom and side sheets were apparently in very good condition and the aluminum upper row of side sheets and deck did not show any evidence of reactions of any kind and were in apparently as good condition as when installed.

Partial view of lower ring of aluminum tank lower side sheets and bottom after one year's service.

This composite tank had been required to handle only treated oil, that is oil that had been passed through the electric dehydrator so the hydrogen sulphide and water contents were very greatly reduced below that in the oil, gas and water as it went into the all-aluminum tank directly from the well.

Because of this difference in fluid handled in the two test tanks the composite

tank did not serve its intended purpose very well for it did not give a direct comparison with the all-aluminum tank, but the results obtained with the all-aluminum tank were such that it seems to justify the use of that metal for this purpose.

From the examination it is judged that this all-aluminum tank will last at least a total of 18 months before the bottom fails, and the side sheets and deck had the appearance of lasting indefinitely.

This would mean replacement of bottom not sooner than 18 months, and it is thought that with proper care to eliminate iron from the inside of the all-aluminum tank the iron sulphide scale entering the tank from other sources will be so small as to be practically negligible, so that the life of the bottom should be much longer than it was on this test, if the aluminum tank is used in ordinary field practice.

The results obtained by the use of the aluminum in the gas or vapor zone in this test is so very satisfactory that it would seem to hold forth great possibilities for the adoption of this metal for the roofs of the larger steel tanks.

Sheet aluminum can be secured in suitable weight and size to permit its use in the construction of roofs for 55,000 and 80,000-bbl. tanks and it is also possible to secure the structural shapes needed to form the superstructure to carry these decks, or aluminum nails can be secured if wood is used for the frame of the roof.

It has also been suggested that bolted steel tanks might be given a longer life if an aluminum roof or deck is used, this being suggested as a means of reducing the formation of iron sulphide scale. This suggestion offers possibilities for reducing losses attributable to steel tank corrosion.

After the composite tank was examined it was also put back into service handling the same class of oil that it had been handling, and both tanks will be continued in service indefinitely, or until such time as failure occurs.

It is proposed to make another inspection of them in the fall of 1929 and a further report will be made at that time. This test seems to justify the expectations of the chemist and metallurgist in the ability of aluminum to withstand the reactions of sulphur or its compounds with that metal, and points the way to a much greater application of aluminum to petroleum industry apparatus.

CLAIM ALUMINUM TANK WILL ENJOY LONG LIFE

(Continued from Page 38)

erally will corrode aluminum to some extent. Nevertheless, it was felt that it would be worth while to test the aluminum under the prevailing conditions existing inside the tanks when under actual field operation. It will be noted at this point that for the bottom ring of the all-aluminum tank, a strong alloy (17ST) was used coated on both sides with high purity aluminum.

In connection with the composite tank with steel bottom and lower ring, aluminum top ring and deck, it was hoped by removing the main source of iron sulphide scale, to study what effect this would have in prolonging the life of the steel.

The tanks were opened on April 15, 1929, and were found to be in excellent condition, free from corrosion due to oil and water. The all-aluminum tank had been used for "bad oil" running over 30 per cent water, and the tank therefore contained some 8 inches to 10 inches of brine on the bottom at all times. At the approximate water level of the lower ring of side plates, some discoloration was apparent, which was so faint that it could not be detected by the sense of touch and did not leave a roughened surface. The metal in the oil phase and the vapor phase, was free from discoloration and was apparently as smooth and bright as the day it was rolled. This includes rafters, channels, ladder and bolts.

No evidence of galvanic action was discovered between the different aluminum alloys used, or between the aluminum and the steel, in the composite tank.

Due to a mistake, a 26-ga. steel gauging well was suspended through the thief hole of the all-aluminum tank for three or four months, last summer. As soon as the mistake had been discovered, this steel pipe was removed; but not until it had been completely effected by corrosion. On careful examination of the bottom of the all-aluminum tank in which this steel pipe had been suspended, a number of blistered pits were discovered, extending approximately half way through the thickness of the sheet. A chemical analysis of scrapings taken from these pits, indicated heavy proportions of iron, sulphides, sulphates, chlorides and silica, and aluminum oxide. It was the opinion of those present that these pits were caused by galvanic action between the iron sulphide flakes from the suspended steel pipe sinking to and making contact with the aluminum bottom. The chemical analysis of the scrapings taken, which is given below, substantiates this theory.

Chemical Analysis

	Per cent
Loss on ignition	34.2
Aluminum oxide	28.6
Iron oxide	2.7
Silica	31.2
Sulphur	Not determined
Sulphur trioxide	Not determined
Chlorides	Not determined

It is interesting to note that the new steel bottoms in adjoining steel tanks installed at the same time as the aluminum tank, and handling the same oil, developed leaks within six months, whereas the aluminum bottom was not pitted halfway through after a perod of twelve months, even though subjected to an unusually severe condtion by the presence of the suspended gauging well. However, should this action on the bottom for some unforeseen reason, continue at the same rate, the bottom should hold for another year without leaking. In this event, the demonstrated life of the aluminum bottom would be four times that of a steel bottom operating under the same oil and water conditions.

The composite aluminum-steel tank was used for the treated oil while the all-aluminum tank handled the oil, gas and water direct from the well. This treated oil did not contain over 1½ per cent water and was practically free of H_2S gas. Both the steel and aluminum seemed to be in good condition, substantiating the theory that the use of aluminum in the vapor phase will protect the steel below by preventing the formation of iron sulphide scale.

The tanks were immediately closed up and put back into service. They will be inspected again this fall.

We may sum up our conclusions by saying that the results of this test indicate that, under the conditions found at this West Texas location, an aluminum tank will enjoy a long and useful life with a minimum of upkeep, more than justifying its additional first cost.

EXPORT ASSOCIATIONS OPPOSED TO ADVANCE

(Continued from Page 169)

sociation the results of the committee's investigation and its recommendation.

"This resolution received the hearty assent and the vote of every member company in the association, except for one or two member companies whose representatives on the association's board of directors were not present at the meeting today. No proposal regarding gasoline export prices other than the above was discussed at today's meeting of the association.

"No member company of the association has at any time or in any manner ever expressed or indicated any disposition to withdraw from the association.

"The association has shown marked progress in its work upon highly complicated problems confronting the American gasoline export trade, and at each successive meeting the member companies have shown an increasing disposition to co-operate with one another in the solution of the problems.

"Today's meeting of the association was in all respects harmonious, hopeful and satisfactory."

Meeting Harmonious

Mr. Montague's repeated reference to the fact that the meeting was conducted on a friendly basis with an absence of acrimony, and the paragraph relating to withdrawals of membership were occasioned by the fact that in the publication of Mr. Airey's remarks the impression was created that serious dissention threatened the association and that "possible dissolution of the association" might be a result of the meeting.

The Export Petroleum Association was formed in January with 15 leading American oil companies in its membership. It came into being following agitation during the previous few months when competitive conditions in foreign markets had become so involved that it was felt by leaders here that there was need for drastic action of a co-operative basis to bring their foreign operations to a more profitable, as well as more efficient basis.

The present organization was decided upon, to operate in a manner similar to export associations in other industries, such as steel, copper, zinc, wood, sulphate, etc. The organization meeting was attended by executives of the industry, thus presenting a group movement representative of the entire American petroleum industry.

One of the prime facts which brought the need for such an association to the attention of the industry's leaders was the belief that far-reaching economies in marketing costs could be accomplished through the elimination of many long haul movements which, although uneconomic, had become common under the keen competitive conditions prevailing.

That the association will successfully meet the different problems facing it in the solution of all problems, of which price is but one of many, is the confident expectation of its membership. Interests outside of the association have been instrumental in circulating rumors of strife among the association membership, but such a condition is branded as "ridiculous" by those in a position to speak with authority.

COMMITTEE TO PREPARE PRODUCTS SPECIFICATIONS

(Continued from Page 169)

176 degrees Fahrenheit (70 to 80 degrees Centigrade).

Endpoint, A.S.T.M., not more than 266 degrees Fahrenheit (130 degrees Centigrade).

This differs from the former specification in the distillation temperatures and through the addition of an aniline point requirement. The aniline point is a measure of the aromatic hydrocarbons present in the naphtha, which have an important effect on the character of the results obtained by the naphtha in the precipitation test.

The aniline point determination is carried out as follows:

Measure 10 c.c. of the sample and 10 c.c. of the aniline, (freshly distilled, free from aminothiophenes) into a large test tube fitted with a stirrer and a thermometer. Heat the mixture by means of a naked flame until it becomes homogeneous, and then allow to cool until it becomes turbid. Raise the temperature slightly and make a duplicate determination. Disregard any slight initial turbidity, taking the temperature when the solution becomes completely cloudy. If the aniline point is more than 10 degrees Centigrade above the room temperature, use another larger test tube to form an air jacket.

One distinct advantage of this new naphtha is that it can be produced from many different kinds of crudes. In general, naphthas prepared from Mid-Continent crude meet the required aniline point without special chemical treatment. If it does fall short of the desired figure by not more than 2 degrees Centigrade, the specified limits can be reached by treatment with 10 per cent by volume of fuming sulphuric acid. Naphthas prepared from Pennsylvania crude give too high and those prepared from Coastal crude give too low aniline points. The desired limits can be obtained by blending.

Doctor Parsons outlines the following procedure for preparing the new naphtha from Mid-Continent crude:

A cut with a boiling range of from 150 to 350 degrees Fahrenheit is taken from a continuous still operating on Mid-Continent crude. It is then charged to an experimental 1-bbl. still from which is obtained a large number of narrow cuts, the first being 10 gallons and the other cuts being 1 gallon each. The A.S.T.M. distillation is then performed on the first and last cut as a result of which an experimental blend is made up from selected cuts which is then submitted for tests. This experimental blend serves as a basis upon which the final blend is made up. The naphtha is then sweetened in order to pass the copper and doctor tests.

It is probable also that natural gasoline will provide a convenient source of this new naphtha merely through removal of the lighter constituents.

OKLAHOMA DELEGATION REPORTS TO GOVERNOR

(Continued from Page 37)

might go in this respect was to enter upon a further study of not only this question but of the conservation problem generally, so far as these three States were concerned, we feel, however, that we may report that there was unanimous objection to the setting up of an interstate conservation agency through an interstate compact, and the vesting of coercive power to regulate the business of producing oil and gas in the compact states in a body of that character. It is not conceivable that an American state would surrender its sovereignty and its police power by any such device. The insurmountable obstacles to such a program are threefold: First, politically. The compact would never receive the sanction of the legislatures of the compact states. Secondly, the oil industry in Oklahoma, at least, and we believe it to be equally true of California and Texas, would never consent to a supercommission of this nature. Finally, there are the impressive objections to this plan upon constitutional grounds. Therefore, we urge upon you the strongest possible resistance to an interstate compact of the coercive character just outlined.

The Tariff Question

"No question before the conference was more strongly urged than the necessity of a tariff on imports of crude oil and refined products into the United States.

"In regard to this question, however, your committee is convinced of two things. First, that the import question is an integral part of our two domestic problems of overproduction and conservation. We further believe that the American petroleum industry can never be brought into a general agreement regarding methods to avert overproduction and to promote conservation until the methods proposed make full allowance for the effect which imports have upon our strictly domestic situation, both in regard to production and conservation. Second, that by reason of an honest belief on the part of the vast majority of independent producers in this State and elsewhere, the tariff question must be settled one way or another, before other substitute measures for the settlement of the international situation will be considered by the elements which are now urging a tariff.

"The petroleum industry in this country should not be subjected longer than it is absolutely necessary to this continued and constant agitation for legislation, changing and affecting the very development and operation of the business. To subject this basic industry to a long and continued uncertainty of its position under the law will only tend to render the industry and its business unstable and unsettled, to the detriment of the industry and the country as well.

"The delegation which you have heretofore appointed should, in our opinion, stand as a permanent committee for your permanent advice and counsel. This because it has the benefit of the experience and knowledge that came out of the initial conference."

OKLAHOMA MARKET FAILS TO IMPROVE

(Continued from Page 36)

passes without an announcement of one or more of these transactions. Several of these jobbing concerns formerly relied on the spot market for the bulk of their purchases.

The other factor is the increased number of contracts. Refiners in their desire to secure assured outlets for their gasoline have made contracts with jobbers based on published quotations with guaranteed margins. These contracts include most of the desirable large accounts still remaining.

Thus the buyers who purchase on the spot market are a minor factor in volume of material moved. In recent months a number of small refineries in West Texas and other points have started up. Most of these refiners do not have any distributing facilities of their own nor do they have contracts with jobbers. They are dependent on the spot market for their gasoline movement.

In addition to these new companies some of the older concerns have increased their output of gasoline without providing a jobber outlet in advance. This gasoline also finds its way to the spot market. The expansion of North Louisiana and Arkansas refinery output is an example of this situation. Formerly the gasoline from these plants was marketed in a local territory to the southeast but in the past month gasoline from these refineries has been quoted at distress prices over a wide territory.

With a limited spot market outlet the supply can easily exceed the demand and this has been the situation for several weeks. When the entire volume of gasoline sold and consumed in the interior market of the Middle West and Southwest is considered, this excess material on the spot market is relatively small but under the conditions now prevailing it has become the dominant marketing factor which threatens to bring down the entire price structure.

Gasolines and Naphthas

The price range for U. S. Motor gasoline as reported by the larger Oklahoma refiners Monday was 8¾ to 9¼ cents with a majority of the quotations at the top figure. The volume of sales, however, continues to decrease despite the increased consumption. Sales outside the larger refineries were reported as low as 8 cents Oklahoma. Low priced gasoline was available to Middle West jobbers from Oklahoma, North Texas, West Texas and Arkansas refiners, some of whom have filled their storage and are forced to move their output from day to day.

Refiners quoting as far east as Ohio, which is outside the normal marketing territory of Oklahoma refiners, reported competition from eastern refiners. Some of this eastern gasoline apparently originated from California and was quoted at prices which the Oklahoma refiners could not meet at 8 cents. More and more California gasoline is finding its way to the East Coast and it is predicted that it will be backed up into the interior so that it becomes a direct factor in the Mid-Continent market.

High gravity gasolines are exceedingly slow and command very little premium over the U. S. Motor gasoline from most refiners. Prices of the larger refiners are unchanged but can be bought with large concessions from other refiners.

Kerosenes and Distillates

The kerosene movement is steady and several refiners have nothing to offer on the spot market. A few Oklahoma and North Texas refiners were competing for spot business and both areas lowered their prices. The 41-43 water white grade was available in Oklahoma at 5½ cents and in North Texas at 5¼ cents. The price range in Oklahoma for the 41-43 grade was as high as 6 cents. The lowering of the Gulf Coast export prices three-fourths cent a gallon also weakened the domestic market.

Distillate prices are steady with a fair summer movement. Any large buying at this season of the year is for storage. An occasional contract is reported.

Fuel Oil and Gas Oil

A large company operating refineries in the Middle West has advanced its prices on several grades of fuel oil and has refused to give further concessions in gas oil. This company has been a large seller of fuel oil and it is expected that its price advances will be of some aid to the Mid-Continent market. Prices were steady in Oklahoma during the past week.

The Kendrick Oil Co., a marketing concern of Tulsa, has closed contracts with the Minneapolis Gas & Light Co. and the Des Moines Gas Co. for gas oil. The first contract is for 1,500 cars for delivery over a period of a year. The Kendrick company is a large buyer of gas oil and has contracts with gas companies and industrial users at other points. The spot gas oil market did not change in Oklahoma during the past week.

Natural Gasoline

The natural gasoline market in Oklahoma and Texas has not improved. Cars for spot movement are sold over a wide range. The larger companies are endeavoring to maintain a price of from 7¼ to 7½ cents for the A and AA grades. But as in the case of refinery gasoline, both grades are available under these prices from other manufacturers. This product also needs more active buying if further price reductions are to be prevented. No general improvement is expected until the refinery gasoline market is strengthened and refiners start buying to blend with their stored gasoline.

The B, BB and C grades were selling at a low of 6¼ cents the first of the week.

On Tuesday one of the large manufacturers was reported to have bought 25 cars of Grade AA at 7⅜ cents. A refining organization was buying a large part of the distress Grades B and BB. It was estimated that these purchases would total around 300 cars. It was expected that this buying would tend to firm the market over the remainder of the week.

Lubricants and Wax

The expected advance in neutral oils mentioned in these columns last week failed to materialize. It was planned at that time to advance the higher viscosity grades from 1 to 1½ cents per gallon. Although one of the largest manufacturers is oversold, other manufacturers have several grades to sell on the spot market. One company advanced its blended oils but for the present at least, the neutral oil price schedules will not be changed.

The price range on steam refined cylinder stocks and bright stocks is unchanged with more companies quoting at the top figure. Very little stock will be available for spot shipment in July from Oklahoma refiners.

Refiners are feeling better regarding the wax situation. They believe that the bottom has been reached and prices will gradually be improved. Although the current market is still quoted around 2½ to 2¾ cents at least two refiners have set 3 cents as the bottom price for the 124-126 grade.

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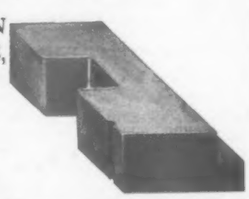

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We build Power Shovels—lots of them—formerly steam and now mostly gasoline. We have on hand four (4) brand new Boilers—never had a fire in them. Two (2) are horizontal locomotive type. One of these is 48"x17'4" rated at 60, Ohio Inspection Certificate No. 80. The other horizontal is 48"x15'8" rated at 50, Ohio Inspection Certificate No. 74. The other two units are vertical type. One is 42"x90" rated at 25, Ohio Inspection Certificate No. 82; this boiler has full length flues. The other vertical unit is 42"x90" rated at 25, Ohio Inspection Certificate No. 71; this boiler has submerged flues. Every boiler is built according to ASME standards and carries ASME certificate. Water columns, fittings, stacks, grates, and all accessories go with each unit.

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THE OSGOOD COMPANY
MARION, OHIO

EAST CENTRAL TEXAS OPERATIONS ROUTINE

CORSICANA, Tex., July 1.—Only routine drilling operations figured in East Central Texas fields and wildcats during the week. At Boggy Creek, Humble Oil & Refining Co.'s No. 1 Beard is drilling at 2,816 feet after drilling out the plug of a string of casing cemented at 2,811 feet. This company's No. 3 Holloway is drilling chalk at 3,423 feet. Its No. 3-A Elliott & Clark is drilling shale at 383 feet and No. 3-A Todd is drilling at 175 feet.

Humble Oil & Refining Co.'s No. 3-A Southern Pine on the Posey Saline, south of the Boggy Creek Dome in Anderson County, is drilling shale and lime at 3,919 feet. Pure Oil Co.'s No. 1 Jackson, Bethel Dome, Anderson County, is drilling hard shale at 4,037 feet. Keene and associates' No. 1 Broomfield, same county, continues shut down after spudding.

Amerada Petroleum Corp.'s No. 1 Wade, Upshur County, J. H. Fields Survey, is drilling lime at 4,789 feet. Hudspeth and associates' No. 1 Wilborn is drilling sandy shale at 1,911 feet.

Caruth & Stewart's No. 2 Flowers, Falls County, is drilling lime at 1,166 feet. Killiam & Phillips' No. 2 Jones, Falls County, is rigged up. Patty and associates' No. 1 Randall, Leon County, is drilling sandy shale at 571 feet.

C. F. Lytle and associates' No. 1 Thompson, Trinity sand test at Mexia, Limestone County, is preparing to drill plug again at 6,061 feet. This test, which has tested salt water several times at this depth is to make another test after experimenting with casing cementing. Fentress and associates' No. 1 Sullivan, Limestone County, is drilling at 83 feet.

In McLennan County, Killiam & Phillips' No. 3 Bryant, Naber Survey, is drilling at 1,224 feet. W. D. Alexander and associates' No. 1 Anderson, Robertson County, Webb Survey, is drilling sandy shale at 2,520 feet. C. M. Joiner's No. 2 Bradford, Rusk County, is drilling water sand at 1,113 feet, and Magnolia Petroleum Co.'s No. 1 Duran, Lollar Survey, same county, is drilling chalk at 2,524 feet.

In Milam County, Rodgers & Heep's No. 1 Duncan tested sulphur water at 2,111 feet and was abandoned. Other operations in this county include Elliott and associates' No. 1 Moore, drilling chalk at 1,653 feet; Brunswell & Hill's No. 1 Booher, Swoap Survey, drilling shale at 2,005 feet; J. M. Burkhead's No. 1 Weignam, drilling chalk at 1,572 feet; E. L. Chapman's No. 1 Gilchrist, drilling lime at 2,368 feet; the same operator's No. 1 Knight, rigged up; Goreman Brothers' No. 1 Dornheifer, drilling lime at 3,488 feet; A. H. Wray's No. 1 Fowley, drilling at 312 feet.

Riverland Oil Co.'s No. 1 Finch, Hardeman Survey, Navarro County, is drilling water sand at 2,686 feet.

In Tyler County, Texas & Southern Petroleum Co.'s No. 3 Cherry, northwest of Woodvine, is drilling at 2,900 feet.

Daily average production of East Central Texas fields for the week ended June 29 was:

Boggy Creek	2,698
Cedar Creek	105
Currie	425
Mexia	5,398
Minerva	650
Nigger Creek	320
Powell	7,857
Richland	350
Thrall	32
Wortham	1,210
Total	19,045
Total previous week	19,220
Decrease	175

METER COMPANY HOLDS ENGINEERING MEETING

The executive and sales personnel of the American Meter Co. assembled recently at the Metric Metal Works Division, Erie, Pa., for a three-day conference devoted to developments in gas measurement and to the consideration of practical methods for making sales and engineering service increasingly effective.

Several sessions were devoted to a study of progress which has resulted from research at the Erie laboratory in connection with measurement by orifice. Particular attention was given to the integrated orifice measurement achieved in in the Linderman meter. Investigations which have been carried on by the company in the field of displacement measurement were presented. Certain phases of these investigations have been finished while others are still in process of development.

It is now established that experimental work relating to high pressure measurement by iron case and orifice meters will be concentrated at the Erie laboratory. At the D. McDonald & Co. division in Albany, an extension in laboratory facilities will make possible the centering of all problems relating to displacement measurement by tinned steel case meters. Experimental work on diaphragms and in apparatus for the testing of gases and meters will be continued in this laboratory on a larger scale. The work of these two laboratories will be closely co-ordinated.

Armored ... to challenge corrosion

An oil pipe line in Oklahoma being wrapped with Carey Asbestos Pipe Line Felt—bonded with cold asphalt cement.

Showing the application of Carey Asbestos Pipe Line Felt, with cold asphalt cement. (Photograph, courtesy of Latex Construction Company.)

Protected against water, corrosion and chemical-bearing soils. Guarded with a mineral shield of Carey Asbestos Pipe Line Felt! Armor which cannot crack or shatter off, decay or wash away. Bond it on quickly, hot or cold—bury those pipe lines, and forget them.

Special Industries Department
THE PHILIP CAREY CO., *Lockland,* Cincinnati, O.
R. B. HALL, Special Mid-Continent Representative
417 Magnolia Bldg.
Dallas, Texas

Carey ASBESTOS PIPE LINE FELT

Of Interest to Sales Departments

California Gasoline Shipped to Atlantic Coast Is Increasing

NEW YORK, July 1.—California gasoline is playing an increasingly important part in the marketing situation in the East as the motoring season gets under way, and reports in local trade circles indicate the movement of the California U. S. Motor product to the Atlantic Seaboard marketing territory during the summer months will break all records. While stocks of gasoline in California are not as topheavy as they were a few years ago, they are still excessive in many instances, and refiners are seizing upon the present popularity of their product in East Coast territory to aid them in stabilizing the position of the Pacific Coast markets by disposing of large quantities of their surplus motor fuel stocks in the East.

Stabilization of California gasoline markets is being aided in large measure by the consolidations and other deals during the past few years, which brought together leading Atlantic Coast companies and California refining groups in most cases. Through this integration, the holding companies in the East have been able to better the statistical position of their Pacific Coast properties by moving surplus stocks of California gasoline East through the Panama Canal and distributing this fuel through their regular marketing channels in this territory. This is in marked contrast to the situation which prevailed five or six years ago, when East Coast territory was the dumping ground for California gasoline and stocks of the Pacific Coast product were laid down at Atlantic Coast terminals at such low prices that not only were Mid-Continent refiners unable to sell in competition, but East Coast refiners as well found the competition unprofitable. At one stage of the game, interior markets as far distant as Cleveland and Detroit found it profitable to buy California gasoline, bring it to New York or Philadelphia by tanker, and ship it by tank car to their home markets, being able to lay down this fuel in their storage tanks at prices less than the delivered quotation on Group 3 gasolines. The situation at that time, however, was an emergency one, and California refiners, greatly overstocked, were admittedly "dumping" their surplus in the East.

The movement of California gasoline to the Atlantic Coast territory for the account of leading factors here is illustrated by the accompanying table showing daily average receipts of California gasoline for the first five months of 1929, with comparative figures for 1928, as well as total receipts by months for this period for the companies mentioned. These figures are taken from shipping reports, and are not from the records of the companies mentioned. In the case of Tide Water Associated, comparative data for 1928 is lacking. The following table shows receipts for the first five months of the year, with comparisons with the corresponding months last year.

The outstanding feature of the extensive marketing operations involving California gasoline in East Coast markets this year is seen in the price stabilization prevailing on the Pacific Coast product. At times since the first of the current

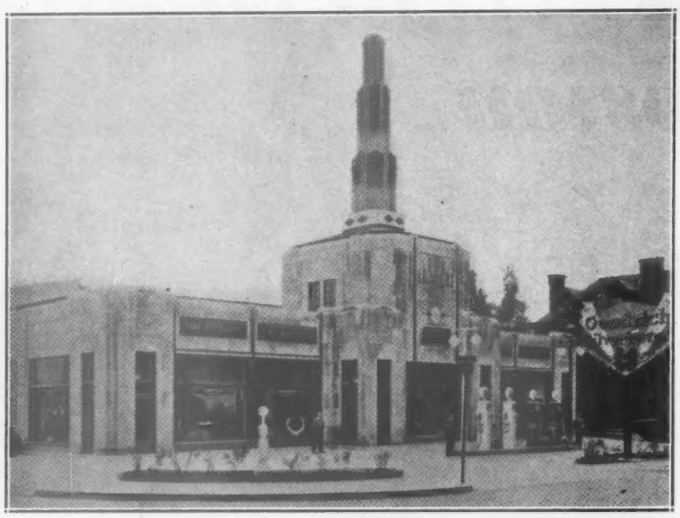
(Continued on Page 198)

OPERATION OF SERVICE STATIONS TURNED OVER TO CHAIN COMPANIES

The adoption of the idea of selling tires, automobile accessories, etc., along with gasoline and lubricating oils in elaborate service stations has become very apparent along the Pacific Coast and companies are now in the process of extending this practice on a large scale into other sections. A program of building superstations along the ideas of Harvey S. Firestone, one of the largest tire manufacturers, was discussed in The Oil and Gas Journal April 4, 1929, page 47, in which Mr. Firestone is quoted as saying his company would spend $60,000,000 for the erection of such stations.

Another very distinct trend is the tendency of the major companies to lease their service stations in small units to chain companies which in turn handle not only their products but tires and accessories as well. This tendency is easily seen in the announcement that an important new outlet for Chanslor & Lyons Stores, Inc., is being developed for automobile accessories by installation of small stocks of accessories at filling stations operated in northern California by Van Fleet-Durkee, Inc., which has taken over operation of a large number of Shell stations in California. It is stated that stocks of a widely known brand of tires

(Continued on Page 198)



Ultra modern service station of the type being adopted in some sections of the country from which tires and automobile accessories are dispensed along with gasoline and oil.

Who's Who
IN PETROLEUM REFINING AND MARKETING

By C. O. Willson

Tenth of a series of articles describing briefly the operations of the major refining and marketing organizations in the United States.

Continental Oil Co.

The newly organized Continental Oil Co. of Delaware, which is a merger of the Continental Oil Co. of Maine and the Marland Oil Co., gives the oil industry another major refining and marketing organization. The merger joins one of the oldest of the original Standard marketing units with one of the aggressive companies which in a period of few years had established itself as a strong independent operator.

The combined companies which will be operated under the Continental name are the largest marketers of petroleum products in the Rocky Mountain States with the nucleus for a strong refining and marketing organization east of these states extending to the East Coast. By the establishment or purchase of refining facilities on the West Coast where the company has crude oil production the new company will be in a position to bring about the national distribution of Continental products.

Following is a list of the refineries all of which will be operated by the Continental company:

Location—	(*)
Florence, Colo.	2,500
Artesia, N. Mex.	1,500
Farmington, N. Mex.	1,000
Glenrock, Wyo.	10,000
Sapulpa, Okla.	10,000
Ponca City, Okla.	30,000
Baltimore, Md.	10,000
Wichita Falls, Tex.	6,000
Total	71,000

*Daily crude oil capacity.

The first five refineries listed, previous to the merger, were owned and operated by the parent Continental company and the Wichita Falls refinery by the Continental Oil Co. of Texas. The Ponca City refinery, which is the second largest in the Mid-Continent Field, was built and operated by the Marland Oil Co. The Baltimore refinery was acquired early in the year when the Marland company purchased the properties of the Prudential Oil Corp.

The refineries have modern equipment, the eight plants manufacturing a wide range of products for the marketing department. The Baltimore refinery was recently placed in operation with new skimming and cracking equipment. The Ponca City refinery has a well-rounded operation with a large output of lubricating oil stocks and finished motor oils.

In the marketing end the bulk station and retail service station facilities of the two companies overlap. This is particularly true in Oklahoma, where the two companies are large marketers. Originally the Continental company confined its marketing to the Rocky Mountain States, buying the bulk of its products from the Midwest Refining Co. (Standard Oil Co. of Indiana.) In recent years the company has operated its own refineries and through purchase of additional properties has become a large distributor of gasoline and lubricating oils in a territory west of the Mississippi River extending north from Texas to the Dakotas.

The Marland company, starting with a small distribution near its Oklahoma refinery, has expanded to include several Southwestern States with scattered distribution units in the Middle West. The acquisition of the Prudential properties gave the company a refinery and a number of bulk and retail stations along the East Coast. These are being rapidly expanded in a program which in time will include all the coastal states from Maine to Florida. At this time it is stated that the merged company has in excess of 2,300 bulk and retail stations located in 22 states and the District of Columbia. It is expected that the marketing facilities will be expanded so as to include all the states east of and including the Rocky Mountain States. This would leave only the West Coast States in which to establish market outlets.

Although primarily a refinery and marketer of petroleum products the original Continental companies had considerable scattered crude oil production to furnish supplies for the operation of their refineries. The Marland company is a large producer of crude oil. The new Continental company will have a fleet of tankers for the movement of crude oil to its coastal refinery. The company also has export outlets with a terminal at Texas City, Tex.

SURVEY OF CARS IN FRANCE

PARIS, France, July 1.—At the end of 1928, France had 1,088,351 cars in service, according to a survey prepared by the French government. The total was composed of 757,668 passenger cars and 330,683 trucks. The increase compared with the previous year is 111,705. Returns are not given by cities but by departments, the Seine district, which includes Paris, heading the list with 179,004 cars. The Nord department comes second with 43,719 automobiles.

PENNSYLVANIA TAX INCREASE

HARRISBURG, Pa., July 1.—Pennsylvania will receive a substantial increase in its gasoline tax revenue this month as a result of the increase in the tax from 3 cents to 4 cents as an emergency measure.

RECEIPTS OF CALIFORNIA GASOLINE AT ATLANTIC COAST POINTS BY THE MAJOR COMPANIES IN THE LAST FIVE MONTHS

(Data given in barrels)

	January		February		March		April		May	
Company—	1929	1928	1929	1928	1929	1928	1929	1928	1929	1928
Standard Oil Co. of N. J.	245,000	118,000	399,000	.....	450,000	118,000	336,000	80,000	.....	165,000
Pan American	281,000	84,000	164,000	281,000	155,000	161,000	274,000	201,000	164,000	365,000
Standard Oil Co. of N. Y.	273,000	355,000	904,000	364,000	253,000	347,000	.....	303,000	535,000	366,000
Atlantic Refining	.....	.....	83,000	180,000	106,000	.....	.....	.....	258,000	103,000
Tide Water Associated	76,000	.....	80,000	.....	156,000	.....	235,000	.....	159,000	.....
The Texas Company	217,000	.....	156,000	.....	76,000	.....	.....	.....	141,000	262,000
All others	316,000	943,000	285,000	751,000	246,000	255,000	327,000	466,000	699,000	366,000

PURE All the Way —from Wells to You

The Pure Oil Company has its own crude producing fields . . . its pipe lines . . . its own large, modern refineries . . . its tank steamers and tank cars . . . its private telegraph lines.

In the producing, refining and marketing of Pure Oil products, every one of the hundreds of jobs—from the nearest sales office to the farthest oil field—is manned by Pure Oil employes . . . over 8,000 of them.

And because *one* organization—The Pure Oil Company—carefully controls all of these operations, you are assured of uniform quality . . . delivery on the dot!

Tune in on the PURE OIL BAND
Conducted by Edwin Franko Goldman
Every Tuesday Night over WJZ and chain

THE PURE OIL COMPANY
U. S. A.

One of the major producing, refining and marketing companies—yet strictly independent

REFINERIES:

Marcus Hook, Pa.
Cabin Creek Jct., W. Va.
Heath, Ohio
Ardmore, Okla.
Muskogee, Okla.
Smith's Bluff, Texas

SALES OFFICES:

Chicago
New York
Philadelphia
Pittsburgh
Columbus, O.
Minneapolis
Tulsa, Okla.
Charleston, W. Va.
Atlanta, Ga.
Beaumont, Tex.
Pensacola, Fla.

Well protected *after 20 months of sun and fog!*

The above picture is from an unretouched photograph of an 80,000 gallon tank of the Los Angeles Department of Water and Power, taken 20 months after coating with McEverlast No. 99. At this time, the inspecting engineer said: "Tank shows no signs of corrosion—protective coating looks good for many more years."

This tank is subject to the worst kind of weather — blistering hot days and cool, foggy nights — causing a maximum expansion and contraction that only a tough coating such as McEverlast could withstand. Even the color hasn't started to fade!

At the time of inspection strips of this coating, cut from the tank, adhered to paper on which they were laid. More than two months later these paint strips could be curled without cracking, showing the remarkable life of the product. Pipes protected with the same product still show no signs of corrosion after ten years of continuous subjection to salt water with the rise and fall of the tide.

Protective Coatings for All Exposed and Underground Metal Surfaces

Wherever there's a need for protection against corrosion or electrolysis — above or below ground — McEverlast products meet the requirements. A request on your letterhead will bring you a copy of our new booklet, "Protecting Pipe-Lines and Exposed Metal Surfaces with McEverlast Protective Coatings."

McEVERLAST, INC.
[MACO]

111 West Seventh St., Los Angeles, Calif.

Branches:

35 E. Wacker Dr., Chicago, Ill. | 1754 Graybar Bldg., New York, N. Y. | 1314 Magnolia Bldg., Dallas, Texas

Offices in: Kansas City, St. Louis, Phoenix, El Paso, Pueblo, Seattle, Honolulu, San Francisco, Oklahoma City.

TO KILL THIS KIND OF FLOWER YOU NEED A HAMMER

What more is calculated to waken the poet's soul than to fare forth in the rosy dawn and cull a bouquet of daisies, lilies and daffodils, freshly fragrant, their delicate petals sparkling with dew?

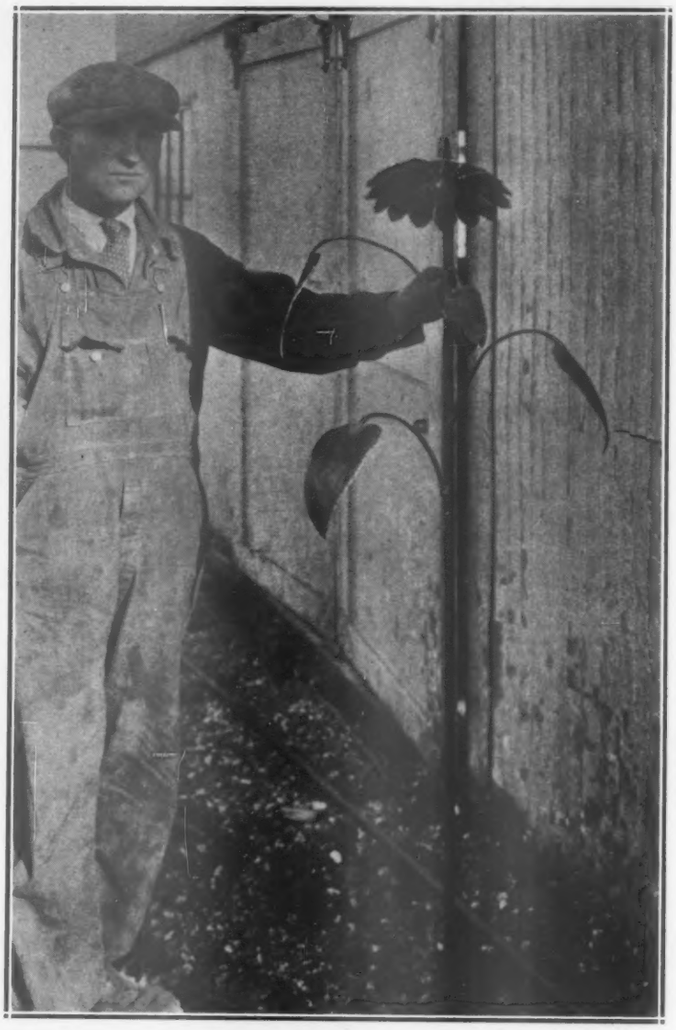
Answer. Nothing.

And wouldn't it be just too thrilling for words to know that the flowers you pluck would not droop and die, but would bloom forever, their loveliness living on and on through the years?

Answer. It sure would.

Well, here you are. But you gotta look out when you start plucking the kind of flower that is seen posing here beside W. H. Lane. The paint might be fresh. And don't try smelling it or you'll cut your nose.

This botanical specimen—it's a sunflower, by the way—is of all-steel construction. Mr. Lane, being a welder in the Earlsboro district, creates his posies with a welding torch and a paint brush. This particular sunflower was growing—not growing exactly, loitering, we'll say—in the yard on the other side of the compressor house. Mr. Lane took it around to the rear for photographing to get the benefit of better sunlight. Then he put it back.



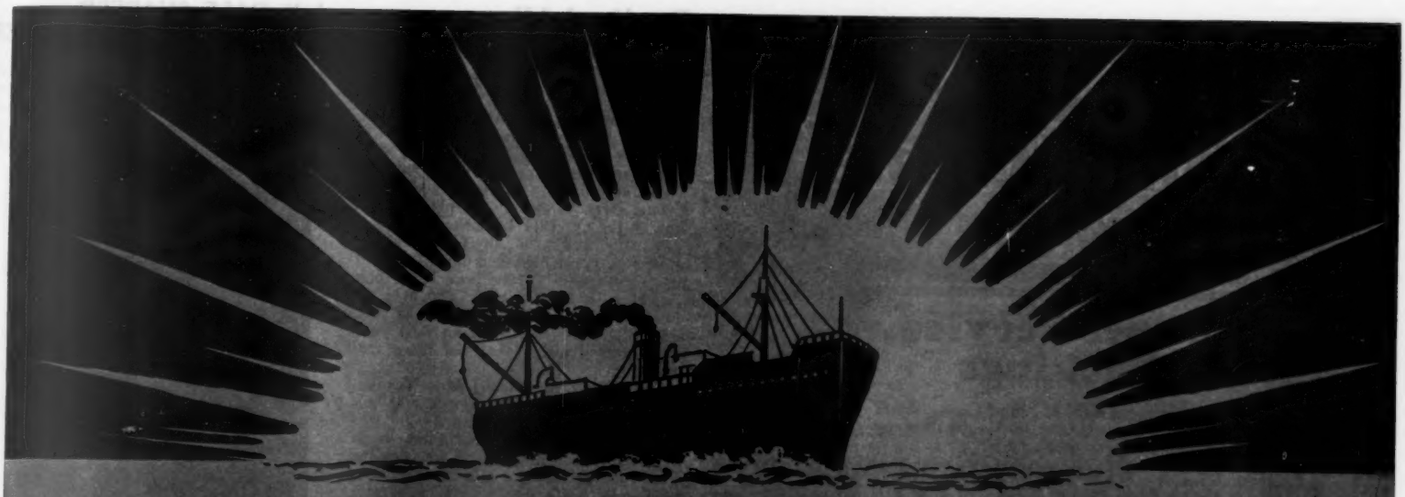
That's only one of the advantages of this ever-blooming floral hardware. You can shift it about regardless. A short piece of 1-inch pipe driven into the ground provides the roots. The yard of Mr. Lane's home is dotted with strictly handmade flowers. When neighbors lament drouths, bugs, black spots and cutworms, he twitters, "I should worry."

TURNER VALLEY QUAKES

CHATHAM, Ontario, June 29.—Strange rumbling sounds coming from beneath the surface of the Turner Valley area have recently attracted notice and been given some study by geologists. Dr. John A. Allan, head of the geological department of the University of Alberta, states that the sounds may be due to readjustment of the sedimentary rock body following the extraction of large quantities of oil and gas. There might also from the same source be slight subsidences of the earth's surface: and a survey by the federal geodetic department might, he intimated, show interesting results. The amount of gas and oil removed is, however, small in comparison with the rock mass, and any adjustments would be of a decidedly minor nature.

INTEREST IN SAFETY WORK

The safety section of the Mid-Continent Oil and Gas Association recently started what it terms a greater Seminole safety contest. Nearly all the companies operating in the large district including pipe line and natural gas companies and one torpedo company are participating in the accident-prevention contest. Letters have been received from many parts of the United States and from India, Russia, and Rumania seeking information on the contest. The first reports on results will be issued as soon after July 1 as possible.



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Estimates on Request

SUN SHIPBUILDING & DRY DOCK CO.
CHESTER, PA., U. S. A.
NEW YORK PHILADELPHIA TULSA

"John Crane" Metallic

Super Service Packings

These alternate rings of "John Crane" styles 250 and 350 are giving better results than any packing heretofore produced on:

Plungers handling cold water carrying an abrasive content.
Hot or cold oil pump plungers.
Mud Pump piston rods, both steam and liquid.
Ideal engine piston rods.
Expansion joints, hot oil or gas.
Air and gas lift compressor rods.

Style 250 is Craneum—a dense semi-metallic plastic in a braided copper jacket.

Style 350 is a braided copper insert in a woven asbestos channel.

Sold in sets or spirals.

NATIONAL SUPPLY COMPANY
Exclusive Distributors in
Kansas—Oklahoma—California

CRANE PACKING COMPANY
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Crane Packing, Ltd., Slough, Bucks, England

They'll Win and Hold Your Confidence

IF you've had experience with production equipment that quits flat on the job you know the effects are slowed up production, overgrown repair bills and excessive production costs.

Champion Drop Forgings have gained and held the confidence of production men throughout the oil industry because of their greater load-bearing strength in vital production equipment. Champions have won this respect on the solid basis of their performance in active service. Their tough, give-and-take strength —their sturdy ability to survive the brutal demands of oil field service is inherited from the steel from which they are made.

Demand drop forgings on all replacement parts and specify drop forgings — particularly Champion Drop Forgings on all new production equipment.

THE CHAMPION MACHINE & FORGING CO.
Cleveland, Ohio

CHAMPION DROP FORGINGS

Bradford-Allegany Fields Producing 30,000 Bbls. Daily

The Bradford and Allegany Fields in McKean County, Pennsylvania, and Cattaraugus and Allegany Counties, New York, are producing about 30,000 bbls. a day according to the reports of statisticians given to George Turnbull, oil editor of the Oil City Derrick.

In May, 1929, the Allegany Field was producing 8,324 bbls. per day. The average production in 1928 was 5,736 bbls. per day. In 1915 it was 1,800 bbls. per day. The field is producing now as much as it was in 1885, less than four years after it was discovered, and more than in any year since 1885.

The Bradford Field, Mr. Turnbull found, is credited with over 21,000 bbls. a day. In 1925 it averaged 14,380 bbls. per day. The peak of production in the field came in 1881 when it was credited with 105,000 bbls. in one day, and averaged over 70,000 bbls. a day for the year. It reached a low in 1916 and then started on its upward climb again.

Both fields are operated under the flooding system, repressuring with water, and it is estimated that they can maintain an average of 30,000 bbls. a day for the next 15 years at least.

It is estimated that only 15 or 20 per cent of the 85,000 acres comprising the productive part of the Bradford structure has been affected by the flood thus far. The structure which yields oil in the Richburg-Bolivar Field in Allegany County is not nearly as large as that comprising the Bradford Field, but it is as rich in per-acre recovery.

Bradford-Allegany crude oil commands a price of $4.35 per barrel and is in great demand because of its superior lubricating oil content.

P.G.C.O.A. TO MEET

OIL CITY, Pa., June 29.—The sixth annual meeting of the Pennsylvania Grade Crude Oil Association will be held in the Blue Room of the William Penn Hotel, Pittsburgh, Pa., on Monday, July 8. A get-together luncheon will be served at 12:30 p. m. daylight saving time and the meeting will be called to order immediately following.

TESTS PERMIT POLICY

Ethel M. McLellan, of Sacramento, Calif., who has filed a suit in the District of Columbia Supreme Court to test

(c) Henry Miller News Picture Service, Inc.
Ethel M. McLellan

the policy of President Hoover and his oil conservation commission to save oil, by challenging the legality of Secretary of the Interior Ray L. Wilbur in his action in canceling her application for a permit to prospect for oil and gas without having given her a hearing.

J. K. DALE SHAFFER SUCCUMBS TO INJURIES

J. K. D. Shaffer, prominent operator in the Kansas and Oklahoma fields for many years, and well known in the Pennsylvania and Illinois fields, where he operated previous to coming to the Mid-

J. K. D. Shaffer

Continent, died in St. Anthony's Hospital in Oklahoma City recently from injuries received in an automobile accident.

"Dale" Shaffer was associated with his brother, C. B. Shaffer, in the discovery of the Cushing Pool in Oklahoma in 1912, and took a prominent part in the management of the Shaffer Oil & Refining Co. previous to its sale to the Byllesby interests in 1920. He operated with the late Elmer E. Smathers of New York in the Kansas Field and was associated with his brother in the ownership of the Barbara Oil Co. and the Theta Oil Co. He had interests in Kansas, Oklahoma and Texas at the time of his death.

Mr. Shaffer was born in Franklin, Pa., the son of one of the early day operators in that cradle of oildom, Venango County. He was one of a family of nine children. Charles and Dale Shaffer chose the oil business as a vocation and worked and operated in the Illinois Field in the heydey of that development. Coming to Oklahoma the brothers started a wildcatting campaign which was successful. The opening of the Cushing Field brought fame and fortune to its discoverers.

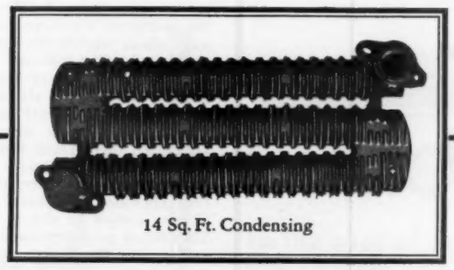
Mrs. Shaffer survives. In the course of their married life the Shaffers made a home for and educated no less than a half dozen boys and girls. One of these boys is their legally adopted son, Jack, age 14 years.

COLOMBIA OIL EXPORTS

During the first four months of the present year 6,276,012 bbls. of crude oil were exported from the port of Cartagena, the April exports being largest but the total amount divided fairly even among the four months. About 53 per cent of the total, 927,234 bbls., went to the United States, 572,715 to New York, 185,829 to Baltimore and 168,689 to Boston. The remaining shipments were divided into 416,866 bbls. to Montreal, 213,110 to Southampton, England; 70,611 to Halifax, 65,047 to Trieste and 49,166 to Buenos Aires.

ARGENTINA'S OIL OUTPUT

The Argentine State Oil Fields Administration has reported a 1928 production, from both state and private wells, of 9,070,243 bbls., a small increase over the 1927 output. The state wells furnished more than half of the 1928 production. The number of producing wells increased from 483 in January, 1928, to 604 in December. The report states that there was a small increase in production in January, followed by a rapid decline per well until the end of the year.



14 Sq. Ft. Condensing

Summer accentuates at least one refinery problem

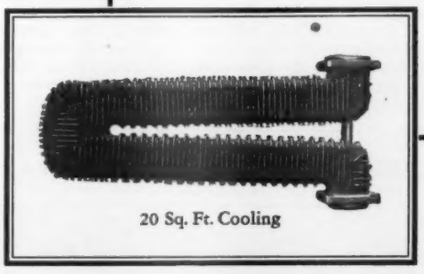
High final temperature of distillates flowing to the run-down tank results in high evaporation loss.

Summer heat coupled with higher initial temperature of condensing water can scarcely be avoided.

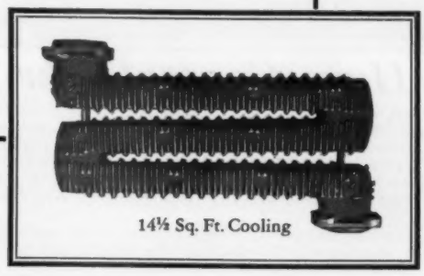
It is possible, and economical, to install condensers that insure a minimum temperature difference between entering water and final distillate stream.

Sterling Oil Condensing and Cooling Sections have abundantly demonstrated their ability in this work over a long period of years in many plants in many countries in both hemispheres.

You may have just such a problem. Our representatives will be glad to consult with you without any obligation on your part.



20 Sq. Ft. Cooling



14½ Sq. Ft. Cooling

AMERICAN RADIATOR COMPANY

INDUSTRIAL DIVISION

816 So. Michigan Avenue, Chicago, Ill.

40 West 40th Street, New York 935 Kennedy Bldg., Tulsa, Okla. 1214 Quinby Bldg., Los Angeles, Cal.

Plant at Springfield, Ill.

THE FULTON THROTTLING REGULATOR

The Fulton Throttling Regulator maintains a constant pressure under varying conditions of load.

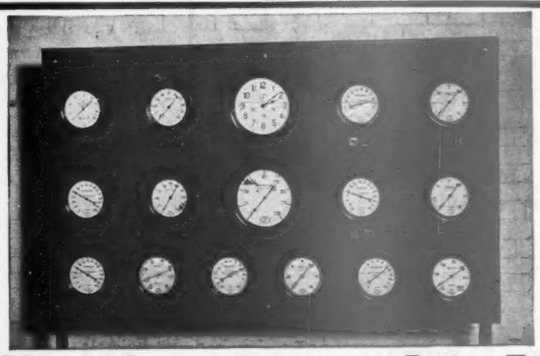
The Regulator is placed in the suction line to the compressor and is controlled by the pressure at the discharge acting on the diaphragm surface, which is balanced by weight on the lever.

A tendency of the discharge pressure to rise overbalances the weight on the lever and the valve moves toward its seat, throttling the suction sufficiently to restore and maintain the discharge pressure at a fixed point.

THE CHAPLIN-FULTON MFG. CO.

Manufacturers of Regulators for Industrial Gas Service

28-40 Penn Ave., Pittsburgh, Pa.



Do You Have Control Like This?

HERE all important temperatures and pressures and the time are together on one gauge board—gas fuel pressure in ounces, oil fuel pressure, atmospheric temperature, high and low pressure steam, feed water temperature and pressure, condensate temperature, etc. A glance at the board shows all factors affecting operation. This instrument panel is in the boiler room of the Jefferson Davis Hospital, Houston, Texas. Do you have control like this? American Dial Thermometers with American Quality Gauges do the trick.

The advantages of American long-distance Dial Thermometers are apparent. Instead of having small glass thermometers to indicate the temperature in remote places, American Dial Thermometers bring these temperatures to you.

Any problem involving indicating or controlling or recording of temperatures or pressures or speeds is our specialty.

Specify Catalogs Desired

American Recording Thermometers	H-5
American Temperature Controllers	R-5
American Glass Thermometers	F-5
American Dial Thermometers	G-5
American Gauges	A-5
American Recording Gauges	E-5
Hancock Globe & Check Valves	X-5

CONSOLIDATED ASHCROFT HANCOCK CO., INC.

Bridgeport, Conn.

Subsidiary of Manning, Maxwell & Moore, Inc.

AMERICAN INSTRUMENTS

SINCE 1851

Forest Oil Co. Adds 1,760 Acres to Its Bradford Holdings

BRADFORD, Pa., June 29.—The Forest Oil Co. of this city has added 1,760 acres of choice Bradford-Sand leases to its already large holdings in this and the Allegany Field and is said to have paid about $4,000,000 for the properties purchased. The 600-acre Burns property on the Barse tract at Knapp Creek was purchased from the six heirs of the late owner. This property adjoins the Forest Oil Co.'s Sims property, which it purchased three years ago. The company bought a 55-acre lease of Slingerland, Miller & Calkins near Dallas City and the Hawkins property on the West Branch owned by the McConnell Oil Co. This latter property consists of 516 acres and is near the Forest Oil Co.'s big Niles farm lease.

The Forest Oil Co. is the largest producer of oil in the Bradford-Allegany district and with the possible exception of the South Penn Oil Co. is the largest acreage owner in the field. Its total holdings aggregate 5,171 acres, and at the cost per acre of Bradford-Allegany leases at the present time, a value of between $15,000,000 and $20,000,000 could safely be put upon it without overshooting the mark.

The growth of this company in the past dozen years is one of the romances of oil. Forest D. Dorn is president of the company and his father, Clayton G. Dorn, is secretary and treasurer. When the younger Dorn was a lad his father was oil buyer for the Tidewater Pipe Co. He had worked for the company since the early 80s, starting in as a boy of about 15. He saved money and invested it well. When Forest Dorn grew to young manhood the two began the formation of the Forest Oil Co. with a nucleus made up of small but good properties of their own. In one of the oldest fields in the United States, which had been left to fade out by many supposedly smart oil men, they built up an organization and a property which is one of the wonders of the oil business. The Forest Oil Co., from the beginning of the flooding method of producing oil in the Bradford Field has been a leader in devising better ways of getting oil out of the Bradford Sand. The company is largely responsible for the increase of several hundred per cent in production in the past 13 years.

W. F. ROBERTSON DEAD

CHATHAM, Ontario, June 29.—William Fleet Robertson, for 23 years provincial mineralogist of British Columbia, died recently at Everett, Wash., while en route for England via the Panama Canal. Born in Montreal in 1859, Mr. Robertson was widely known in the oil and mining world.

PIPE LINE RECEIPTS DELIVERIES AND STOCKS

The following reports on receipts, deliveries and stocks have been received from pipe line companies operating in Oklahoma and Kansas for the month of May: Gulf Pipe Line Co. of Oklahoma, runs 1,898,777 bbls., daily average 61,251 bbls.; shipments 1,706,152 bbls., daily average 55,037 bbls.; stocks, including pipe line and Gypsy Oil Co., 9,717,375 bbls.; Texas Pipe Line Co. of Oklahoma receipts, 895,813 bbls., daily average 28,897 bbls.; deliveries 1,139,132 bbls., daily average 36,746 bbls.; stocks, including pipe line and The Texas Company in Oklahoma, 8,843,149 bbls.; Empire Pipe Line Co. receipts 1,356,261 bbls., daily average 43,750 bbls.; deliveries 1,578,151 bbls., daily average 50,908 bbls.; stocks 3,906,877 bbls.; Magnolia Pipe Line Co. receipts 2,311,910 bbls., daily average 74,577 bbls.; deliveries 2,326,603 bbls., daily average 75,052 bbls.; stocks 9,849,110 bbls.; Cosden Pipe Line Co., (Mid-Continent Petroleum Corp.), receipts 962,893 bbls., daily average 31,061 bbls.; deliveries 825,750 bbls., daily average 26,637 bbls.; stocks 3,610,277 bbls.; Oklahoma Pipe Line Co. receipts 3,014,294 bbls., daily average 97,235 bbls.; deliveries 3,105,575 bbls., daily average 100,180 bbls.; stocks 3,213,262 bbls.

NEW A.I.M.E. VOLUME IS NOW OFF THE PRESS

"Petroleum Development and Technology, 1928-29," published by the American Institute of Mining and Metallurgical Engineers, New York, adds another to the list of invaluable volumes published annually by the institute. The book, containg more than 600 pages, is made up of papers presented before the petroleum division of the institute at the Tulsa meeting October, 1928, and the New York meeting in February, 1929.

The papers are grouped in eight chapters: Production Engineering, Petroleum Research, Petroleum Production, United States; Petroleum Production, Foreign; Petroleum Economics; Petroleum Engineering Education; Petroleum Refining and Gas Transportation. The authors of the various papers are leaders in their respective branches of engineering.

OIL EXPLORATION IN CHILE

The possible petroleum resources of the Magallanes district have been examined by two Chilean engineers, authorized by the Chilean government, but no exploration in this vicinity has been undertaken by the government since April, 1928. It is reported that a sum approximating $250,000 has been appropriated for petroleum exploration throughout the country, but particularly in the Territory of Magallanes. The presence of petroleum has not yet been proved.

SOUTHWEST TEXAS SPECTACULAR FIRE

Shell Petroleum Corp.'s No. 1 Clyant Smith, Joe Bruner Field.

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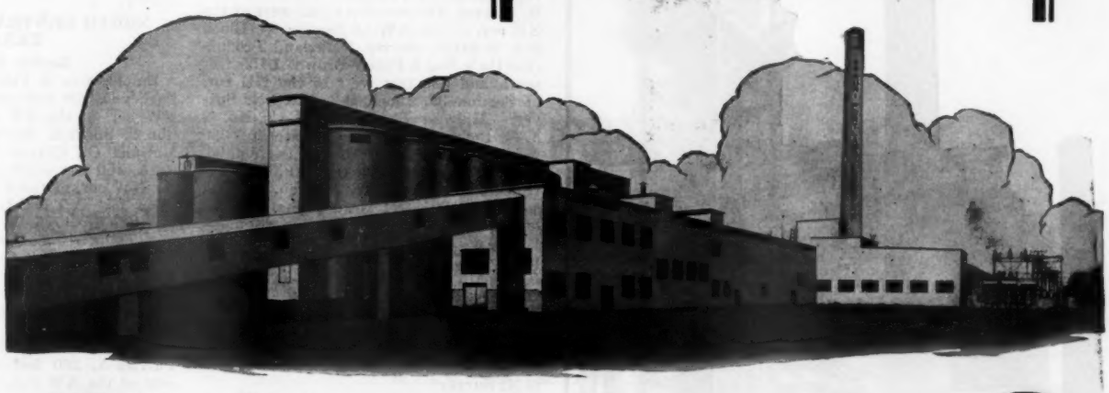

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The Walter E. Lummus Co.
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NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

TEXAS PANHANDLE

Carson County

Empire Gas & Fuel Co.'s No. 17 S. B. Burnett, at the C of the NE of Section 78, Block 4, I.&G.N. Survey. Same company's No. 18 S. B. Burnett, at the C of the NW of Section 96, Block 5, I.&G.N. Survey. Midwest Exploration Co.'s No. 3 E. Cooper, 990 feet south and 330 feet east of the NW cor. of the W half of the NW of Section 5, Block 9, I.&G.N. Survey. Midwest Exploration Co.'s No. 2 J. L. Moore, 330 feet north and 1,320 feet east of the SW cor. of the NW of Section 125, Block 4, I.&G.N. Survey. Skelly Oil Co.'s No. 17 H. Schafer, 330 feet north and west of the SE cor. of the NW of Section 198, Block 3, I.&G.N. Survey.

Gray County

Gulf Production Co.'s No. 6 William Jackson, 250 feet south and 287 feet east of the NW cor. of the Gulf Production Co.'s 160-acre lease out of Section 62, Block B-2, H.&G.N. Survey. Lyon and others' No. 1 J. S. Morse, 330 feet north and east of the SW cor. of the N half of the NE of Section 2, Block 26, H.&G.N. Survey. The Texas Company's No. 5 J. E. Williams, 990 feet south and 330 feet west of the NE cor. of the NW of Section 7, Block 1, A.C.H.&B. Survey. British-American Oil Co.'s No. 2 Purviance and others, 330 feet north and east of the SW cor. of the east 160 acres of Section 61, Block B-2, H.&G.N. Survey. Danciger Oil & Refining Co.'s No. 2 H. K. Beck, 330 feet north and east of the SW cor. of the NW of Section 28, Block B-2, H.&G.N. Survey. Danciger Oil & Refining Co.'s No. 3 H. K. Beck, 330 feet south and 990 feet east of the NW cor. of Section 28, Block B-2, H.&G.N. Survey. Empire Gas & Fuel Co.'s No. 1 J. G. Noel, at the C of the SE of Section 151, Block 3, I.&G.N. Survey. Humble Oil & Refining Co.'s No. 2 W. Jackson, 330 feet north and 287 feet west of the SE cor. of Section 90, Block B-2, H.&G. N. Survey.

McMan Oil & Gas Co.'s No. 2 W. Jackson, 330 feet north and east of the SW cor. of the W half of the E half of Section 90, Block B-2, H.&G.N. Survey. McMan Oil & Gas Co.'s No. 2 J. H. Palmer, 330 feet south and west of the NE cor. of the east 100 acres of the west 200 acres of Section 31, Block B-2, H.&G.N. Survey. Magnolia Petroleum Co.'s No. 6 J. B. Bowers, 330 feet south and west of the NE cor. of the NW of Section 63, Block B-2, H.&G.N. Survey. Marland Production Co.'s No. 5 Finley-Brown, 1,155 feet south and 330 feet west of the NE cor. of Section 32, Block B-2, H.&G.N. Survey. Midwest Exploration Co.'s No. 2 J. B. Bowers-B, 1,320 feet south and 330 feet west of the NE cor. of Section 93, Block B-2, H.&G.N. Survey. Phillips Petroleum Co.'s No. 6 W. Jackson, 330 feet south and 991 feet west of the NE cor. of the S half of the NE of Section 88, Block B-2, H.&G.N. Survey. Same company's No. 5 W. Jackson (Joe Dan), 330 feet south and 990 feet west of the NE cor. of Section 88, Block B-2, H.&G.N. Survey. Same company's No. 6 W. Jackson (Joe Dan), 330 feet north and 990 feet east of the SW cor. of the N half of the NE of Section 88, Block B-2, H.& G.N. Survey.

Prairie Oil & Gas Co.'s No. 3 W. W. Harrah, 330 feet north and east of the SW cor. of the north 80 acres of the east 240 acres of Section 163, Block 3, I.&G. N. Survey. Same company's No. 1 M. L. Langham, 330 feet north and east of the SW cor. of Section 1, Block B-2, H.&G.N. Survey. Skelly Oil Co.'s No. 4 W. Jackson (North), 330 feet north and 990 feet west of the SE cor. of the W half of Section 90, Block B-2, H.&G.N. Survey.

The Texas Company's No. 14 J. B. Bowers, 330 feet south and east of the NW cor. of the E half of Section 89, Block B-2, H.&G.N. Survey. The Texas Company's No. 5 Cook-Faulkner, 330 feet north and 990 feet east of the SW cor. of Section 29, Block B-2, H.&G.N. Survey. Same company's No. 6 Cook-Faulkner, 1,148 feet north and 330 feet east of the SW cor. of Section 29, Block B-2, H.&G. N. Survey. Same company's No. 2 Combs & Worley, 330 feet north and 2,310 feet west of the SE cor. of the S half of the SE of Section 36, Block 3, I.&G.N. Survey. Same company's No. 3 Combs & Worley, 330 feet north and west of the SE cor. of Section 36, Block 3, I.&G.N. Survey. Same company's No. 4 Combs & Worley, 330 feet north and 1,726 feet west of the SE cor. of Section 36, Block 3, I.&G.N. Survey. Same company's No. 4 J. M. Patton, 330 feet north and 2,866 feet east of the SW cor. of Section 61, Block B-2, H.&G.N. Survey. Same company's No. 5 J. M. Patton, 330 feet north and 2,136 feet east of the SW cor. of Section 61, Block B-2, H.&G.N. Survey.

Hutchinson County

Gulf Production Co.'s No. 46 C. L. Dial and others, 330 feet south and 990 feet west of the NE cor. of the S half of Section 26, Block 47, H.&T.C. Survey. Phillips Petroleum Co.'s No. 1 R. F. Cheatham, 427 feet north and 330 feet west of the SE cor. of the SE of the SE of Section 38, Block Y. Same company's No. 1 Johnson Brothers (Katz), 350 feet north and 330 feet east of the SW cor. of the W half of the SW of Section 35, Block Y. Prairie Oil & Gas Co.'s No. 4 Cal Merchant, 5,612 feet south and 330 feet east of the NW cor. of Section 37, Block 47, H.&T.C. Survey. Same company's No. 5 Diana Shaw, 330 feet south and 1,650 feet west of the NE cor. of Section 27, Block Y. Rock Creek Oil Co.'s No. 4 Johnson Brothers, 990 feet north and 330 feet west of the SE cor. of the W half of the SE of Section 28, Block Y. The Texas Company's No. 2 J. K. Quinn, 990 feet north and 330 feet east of the SW cor. of the E half of Section 7, Block 9, I.&G.N. Survey.

Moore County

Skelly Oil Co.'s No. 10 Armstrong & Byrd, 330 feet north and 1,320 feet east of the southwest corner of the F. Bazemore Survey.

Wheeler County

Fain and others' No. 2 Binkley & Caine, at the C of the SE of Section 55, Block 24, H.&G.N. Survey. Gibson Oil Co.'s No. 8 W. E. Bentley, 330 feet south and 990 feet east of the NW cor. of the SE of Section 42, Block 24, H.&G.N. Survey.

NORTH CENTRAL AND WEST TEXAS

Archer County

Empire Gas & Fuel Co.'s No. 1 J. R. Parkey-C, 150 feet south and east of the NW cor. of the SW of the SW of Section 2, S.P.R.R. Survey, A-1,233. Fain-McGaha Oil Corp.'s No. 3 W. H. Taylor-A, 150 feet south and 750 feet east of the NW cor. of the S half of Lot 11, Section 17, A.T.N.C.L. Survey. F. H. Gohlke's No. 6 L. F. Wilson-B, 450 feet north and 510 feet west of the SE cor. of Lot 25, Wilson's Geraldine Subdivision. Kemrow Production Co.'s No. 6 J. W. Campbell, 1,200 feet south and 450 feet east of the NW cor. of Section 1, Denton County School Land, League 3, A-117.

F. Payne and others' No. 5 Mrs. J. E. Parrish-A, 200 feet south and 750 feet east of the NW cor. of the east 20 acres of the west 50 acres of the north 100 acres of the S half of Section 2, S.P.R.R. Survey, A-1,004. Perkins & Callum's No. 2 J. J. Perkins, 2,290 feet south and 1,470 feet east of the NW cor. of Lot 1, Section 10, A.T.N.C.L. Survey. Pois & Schultz and others' No. 5 J. B. Miller, 850 feet south and 605 feet east of the NW cor. of Lot 5, Section 19, A.T.N.C.L. Survey. Atlantic Oil Production Co. and Ven Mex Oil Co.'s No. 2 R. D. Andrews, 1,392 feet south and 1,750 feet east of the NW cor. of the south 200 acres of the north 250 acres of the F. A. Whitaker Survey, A-674. C. W. Boller's No. 1 J. R. Peters, 1,470 feet north and 1,500 feet east of the SW cor. of the I.&G.N. Survey No. 2, A-692.

Continental Oil Co.'s No. 5 J. T. Rich-

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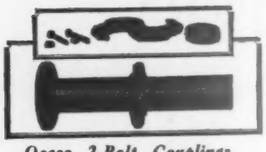
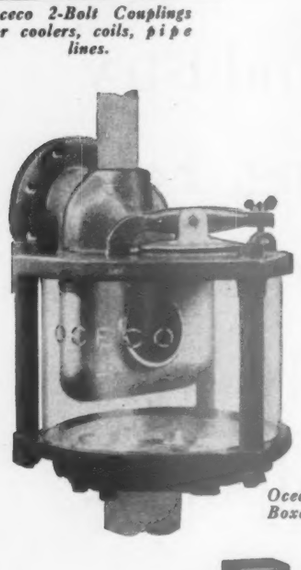


Oceco 2-Bolt Couplings for coolers, coils, pipe lines.



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There's a big saving in using these dependable Oceco Fittings . . . for receiving house, stills, refinery yard. May we send you the proof?

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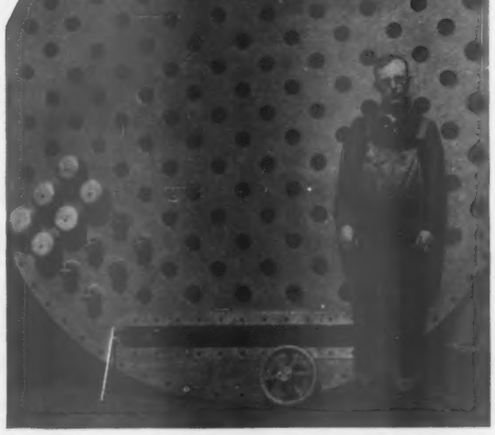

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ardson-B, 500 feet south and 808 feet east of the NW cor. of Section 10, Thomas McCoy Survey, A-269. Same company's No. 1 Falls County School Land-C, 609 feet north and 200 feet west of the southeast corner of the south 50 acres of Section 16, Falls County School Land, A-130. Estacado Oil Co. and others' No. 2 H. O. Prideaux, 150 feet north and 450 feet west of the southeast corner of Lot 24, W. J. Fraley Subdivision, John Dorsey Survey, A-122. G. W. Gilliland's No. 3 G. H. Roach, 450 feet south and west of the NE cor. of the west 265.5 acres of Section 1,595, T.E.&L. Survey. Humble Oil & Refining Co.'s No. 4 A. M. Kunkel and others, 150 feet north and 750 feet west of the SE cor. of the north 40 acres of the E half of Section 3, B.B.B.&C. Survey, A-51. Johnson & Fraser's No. 1 C. E. Graham, 3,500 feet north and 1,400 feet east of the southwest corner of the F. Gibenrath Survey, A-136.

Brown County

M. T. Anderson's No. 1 C. W. Jones, 200 feet north and 1,100 feet east of the SW cor. of Section 16, Juan Delgado Survey No. 785. G. A. Buder, trustee's No. 4 F. H. Cross, 150 feet south and 450 feet east of the NW cor. of his 12.33-acre lease out of the R. Honeycutt Survey No. 623. Cranfill & Reynolds' No. 1 H. J. Marr-C, 150 feet south and 450 feet west of the northeast corner of the H. P. Tuggle Survey No. 62. Cranfill & Reynolds and others' No. 1 S. A. Robertson, 1,000 feet north and 2,927 feet west of the southeast corner of the S.A.& M.G. Survey No. 3, A-850. Gore & Brown's No. 1 J. W. Dabney, 738 feet north and 984 feet east of the SW cor. of Section 15, Matilda Cherry Survey No. 25. Humble Oil & Refining Co.'s No. 20 A. W. Armstrong, 540 feet south and 700 feet east of the northwest corner of the Juan Delgado Survey No. 785. Same company's No. 21 A. W. Armstrong, 1,320 feet south and 700 feet east of the northwest corner of the Juan Delgado Survey No. 785.

Ven Mex Oil Co.'s No. 5 Roy Hickman-D, 150 feet north and east of the southwest corner of the J. McGloin Survey. Brown and others' No. 1 A. McIntosh, 810 feet south and 150 feet west of the northeast corner of the A. McIntosh 115-acre tract out of Section 28, H.T.&B. Survey. Ditto Oil Interests' No. 5 J. L. Richardson, 550 feet north and 800 feet west of the southeast corner of the S.A.&M.G. Survey. R. F. Honea's No. 1 G. W. Churchill, 150 feet northwest of the southeast line and 150 feet southwest of the northeast line of the G. W. Churchill 100-acre tract out of the M. Curbier Survey No. 141.

Callahan County

Mook-Texas Oil Co. and others' No. 1 F. Johnson and others, 150 feet south and 400 feet east of the NW cor. of the E half of Section 83, Comal County School Land. Texas Pacific Coal & Oil Co.'s No. 14 C. C. Westerman, 150 feet south and east of the NW cor. of Section 54, Comal County School Land.

Clay County

R. T. Belcher and others' No. 1 B. Landrum, 450 feet south and 150 feet west of the NE cor. of the south 40 acres of the east 100 acres of Section 5, Parker County School Land, A-374.

Coleman County

Broderick & Calvert's No. 1 Alice Bennett, 150 feet north and west of the southeast corner of Lot 42, L. Johnson Survey No. 480. Eastland Oil and Shell Petroleum Co.'s No. 1 I. Keeney-B, 1,525 feet north and 2,600 feet east of the southwest corner of the R. Cochran Survey No. 269. T. M. Weathered's No. 1 M. and A. E. Dalton, 300 feet south and east of the northwest corner of the W. D., A. G. and J. F. Slayton Survey No. 156. C. S. Wilmott's No. 1 Lee Vaughn, 750 feet south and 1,350 feet east of the northwest corner of the Bonds & Sanders Survey No. 79.

Crane County

Gulf Production Co.'s No. 66 J. T. McElroy, 1,442 feet south and 4,950 feet east of the NW cor. of the Gulf Production Co.'s lease out of Section 200, Block F, C.C.S.D.&R.G.N.G.R.R. Survey. Duffey and Skelly Oil Co.'s No. 1 University Land, 2,310 feet north and 330 feet west of the SE cor. of Section 45, Block 30, University Land. Prairie Oil & Gas Co.'s No. 7 University Land, 330 feet south and east of the NW cor. of the NE of Section 39, Block 30, University Land. Same company's No. 8 University Land, 330 feet north and east of the SW cor. of the NE of Section 39, Block 30, University Land. Tidal Oil Co.'s No. 2 University Land-E, 330 feet north and west of the SE cor. of the NW of Section 39, Block 30, University Land.

Crockett County

Taylor-Link Oil Co.'s No. 3 L. P. Powell, 1,584 feet south and 1,344 feet east of the NW cor. of Section 52, Block BB, G.C.&S.F. Survey.

Eastland County

Conway Brothers & Champion's No. 4 Maud Simmons, 750 feet south and east of the NW cor. of Section 27, McLennan County School Land, League 2. States Oil Corp.'s No. 6 A. Hise estate, 872 feet south and 757 feet west of the NE cor. of the SE of Section 17, Block 4, H.&T.C. Survey.

Erath County

C. C. Peters and others' No. 3 E. M. Barton, 425 feet south and west of the northeast corner of the Moses Goff Survey.

Glasscock County

A. & F. Oil Co.'s No. 1 S. Turner, 2,310 feet south and 330 feet west of the NE cor. of Section 19, Block 33, T-2-S, T.&P. Survey.

Grayson County

C. Bell and others' No. 1 W. S. Conn, 330 feet south and east of the NW cor. of the SW of the NW of the T. Grace Survey, A-1,436. F. H. E. Oil Co.'s No. 1 R. W. Getzendaner, 330 feet south and east of the NW cor. of the NW of the SW of the L. T. Loveall Survey, A-746. Sherman Oil Co.'s No. 2 R. C. Dalton, 450 feet south and 300 feet east of the NW cor. of the R. C. Dalton 32-acre tract out of the James Ingram Survey.

Haskell County

Superior Oil Corp.'s No. 4 Reynolds Cattle Co., 1,450 feet south and 50 feet west of the northeast corner of the A. Rodriguez Survey, A-350. Same company's No. 5 Reynolds Cattle Co., 2,150 feet south and 50 feet west of the northeast corner of the A. Rodriguez Survey, A-350.

Howard County

Gulf Production Co.'s No. 6 H. R. Clay, 1,158 feet south and 150 feet east of the NW cor. of Section 155, Block 29, W.&N.W.R.R. Survey. Merrick & Lamb's No. 8 H. R. Clay, 1,120 feet north and 1,100 feet west of the SE cor. of Section 126, Block 29, W.&N.W.R.R. Survey. The California Co.'s No. 7 Dora Roberts, Lease 2, 874 feet north and 990 feet west of the SE cor. of Section 137, Block 29, W.&N.W.R.R. Survey.

Kimball County

C. L. Bryant and others' No. 1 C. E. Lambert, 700 feet south and east of the southwest corner of the L. L. Lewis Survey No. 44, and located in the F. Latta Survey No. 43. Lindsay Brothers and others' No. 1 G. M. Amberson, 1,320 feet south and west of the northeast corner of the B. Hubinger Survey No. 167.

Loving County

Lockhart & Co.'s No. 2 Bowen & Wells, 990 feet southeast of the northwest line and 330 feet northeast of the southwest line of Section 92, Block 1, W.&N.W.R.R. Survey.

Pecos County

Gulf Production Co.'s No. 19 A. M. Smith and others, Trustee-A, 330 feet south and 2,770 feet west of the NE cor. of Section 28, Block 194, G.C.&S.F. Survey, being 330 feet south and 55 feet west of the northeast corner of the Proration Unit "A".

NORTH CENTRAL AND WEST TEXAS

Week Ending June 19

Presidio County

L. C. Brite's No. 4 L. C. Brite, 271 feet south and 1,188 feet west of the NE cor. of Section 245, Block 4, H.&T.C.

Reagan County

Big Lake Oil Co.'s No. 167 University Land, 320 feet north and 400 feet east of the SW cor. of Section 1, Block 2, University Land. Same company's No. 168 University Land, 2,240 feet north and 1,720 feet east of the SW cor. of Section 1, Block 2, University Land. Same com-

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LORRAINE
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Conserves Time—Saves Rods
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Designed for speed and safety the Lorraine Sucker Rod Rack meets *every* requirement that makes for efficient service. No device equals it for running in or pulling out a string of rods. No danger to men, no damage to rods. Made in 2 sizes, holding 60 or 88 stands of rods in compact position with absolute safety.

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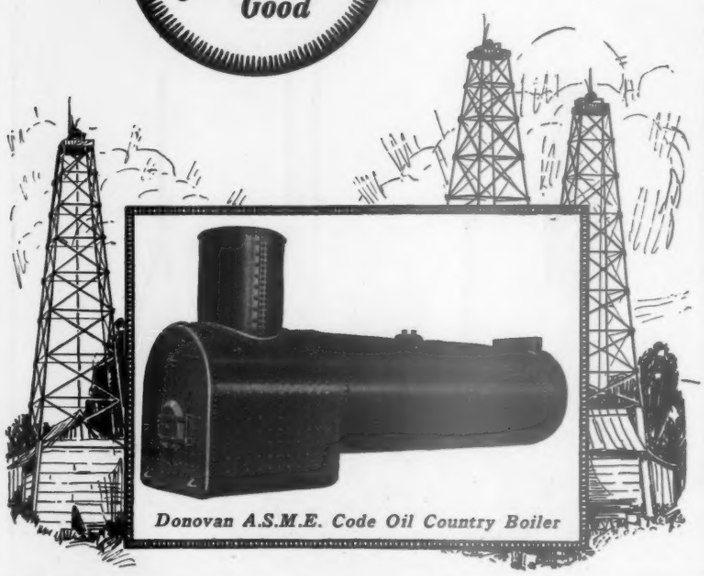
Donovan Boilers are Consistently Good



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MUCH STEAM FROM LITTLE FUEL

The DONOVAN has always been known as an easy steamer, economical on fuel, for which there are several reasons.

One reason for this is the size and location of the dome. The dome on each DONOVAN is located over the firebox which is the hottest part of the boiler and the steam coming off the crown sheet is, therefore, bound to be hotter and drier than that taken from any other place.

You will note that the dome is extra large. This provides a reservoir or "store house" for the steam, larger than usual, and gives the boiler reserve power for sudden pulls.

This feature is one reason why the DONOVAN furnishes an ample supply of dry steam at all times and is hard to pull the water out of.

The real boiler for the hard jobs

Manufactured by

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FRICK-REID SUPPLY CORPORATION
Mid-Continent and Eastern Distributors
GREAT NORTHERN TOOL & SUPPLY CO.
MIDLAND IRON WORKS
Montana Distributors

All Leading Supply Houses Throughout the Eastern Fields Handle

DONOVAN QUALITY PRODUCTS

NONE BETTER

pany's No. 169 University Land, 920 feet south and 2,240 feet east of the NW cor. of Section 36, Block 1, University Land. Same company's No. 170 University Land, 1,425 feet south and 1,720 feet west of the NE cor. of Section 1, Block 2, University Land. Same company's No. 171 University Land, 1,320 feet north and east of the SW cor. of Section 12, Block 2, University Land. Same company's No. 172 University Land, 400 feet south and 1,320 feet west of the NE cor. of Section 1, Block 2, University Land. Same company's No. 173 University Land, 2,320 feet south and 1,720 feet west of the NE cor. of Section 1, Block 2, University Land.

Shackelford County

Engle Brothers' No. 3 J. B. Matthews-B, 150 feet north and 500 feet west of the SE cor. of the NE of the NE of Section 32, Block 10, E.T.R.R.

Stephens County

Ed Bateman & Co.'s No. 1 F. A. Manning, 150 feet south and east of the NW cor. of the E half of the SW of Section 42, Block 4, T.&P.

Throckmorton County

Cranfill & Reynolds' No. 1 B. S. Walker, 1,229 feet south and 1,470 feet east of the NW cor. of the W. Bramlette Survey No. 4, A-24. J. A. Bearman's No. 1 Kirk Ledbetter, 1,170 feet southwest of the NE line and 150 feet southeast of the SE line of the A. J. Kemp Survey A-1,369 and located in the W. P. Bennett Survey A-1,356. J. A. Bearman's No. 2 Kirk Ledbetter, 1,950 feet southwest of the NE line and 150 feet southeast of the SE line of the A. J. Kemp Survey A-1,369 and located in the W. P. Bennett Survey A-1,356. O. C. Profit's No. 1 B. S. Walker, 750 feet south and 150 feet east of the NW cor. of the W. Bramlette Survey No. 4, A-24. Roeser-Pendleton & Holder's No. 2 R. M. Titus-A, 1,716 feet south and 1,383 feet west of the SE cor. of Section 914, T.E.&L., and located in the N. Williams Survey. Roeser-Pendleton & Holder's No. 3 R. M. Titus-A, 1,716 feet south and 783 feet west of the SE cor. of Section 914, T.E. &L., and located in the N. Williams Survey. Same company's No. 4 R. M. Titus-A, 1,716 feet south and 483 feet west of the SE cor. of Section 914, T.E.&L., and located in the N. Williams Survey. J. A. Bearman's No. 1 Lee Tuton, 600 feet northeast of the SW line and 150 feet northwest of the SE line of the NE 160 acres of the SE 320 acres of the A. J. Kemp Survey A-1,369.

Upton County

Dixie Oil Co.'s No. 30 A. S. Burleson, 990 feet south and 2,640 feet west of the NE cor. of their lease out of the John Nidever Survey No. 2, A-749.

Wichita County

American Refining Co. Properties' No. 6 L. Morgan, 1,050 feet north and 150 feet west of the SE cor. of their 38.82-acre lease out of the L. Meadows Survey A-785. Golding-Cochran & Mayfield's No. 5 J. L. & T. J. Waggoner, 450 feet north and 150 feet west of the SE cor. of Lot 22, H. George Survey A-454.

Wilbarger County

Fain-McGaha Oil Corp.'s No. 9 W. T. Waggoner-W, 150 feet north and 800 feet east of the SW cor. of their lease out of Section 32, Block 4, H.&T.C. Same corporation's No. 10 W. T. Waggoner "W," 178 feet north and 450 feet east of the SW cor. of their lease out of Sec. 32, Block 4, H.&T.C. C. F. Kolp's No. 7 W. T. Waggoner-G, 150 feet south and west of the NE cor. of Section 18, Block 4, H.&T.C. E. B. Lawson's No. 5 W. T. Waggoner-A, 205 feet south and 660 feet west of the NE cor. of the SW of the SE of Section 25, Block 4, H.&T.C. Lewis Producing Co.'s No. 4 W. T. Waggoner-B, 205 feet south and east of the NW cor. of the SW of the SE of Section 17, Block 4, H.&T.C. Melat Oil Co.'s No. 8 W. T. Waggoner-A, 1,812 feet north and 150 feet west of the SE cor. of Section 10, Block 4, H.&T.C. Phillips Petroleum Co.'s No. 3 W. T. Waggoner-O, 330 feet north and east of the SW cor. of the SW of the SE of Section 45, Block 4, H.&T.C. Same company's No. 3 W. T. Waggoner-RR, 330 feet south and east of the NW cor. of the SE of the NE of Section 44, Block 4, H.&T.C. Same company's No. 5 W. T. Waggoner (Norwood), 1,996 feet north and 200 feet west of the SE cor. of the NE of the SW of Section 18, Block 4, H.&T.C. Shaw Oil Co.'s No. 6 W. T. Waggoner-G, 150 feet south and 2,790 feet east of the NW cor. of Section 40, M.E.P.&P. Staley-Wynee & Co.'s No. 2 W. T. Waggoner-S, 660 feet south and 160 feet east of the NW cor. of the SE of the SW of Section 25, Block 4, H. &T.C.

Winkler County

Southern Crude Oil Purchasing Co.'s No. 10 T. G. Hendricks T-88-U, 330 feet north and 2,310 feet west of the SE cor. of Section 41, Block 46, School Land.

Young County

L. G. Bradstreet Co.'s No. 3 T. L. Richardson, 1,374 feet south and 1,185 feet west of the NE cor. of the J. G. Maupin Survey A-1,483. Clarida & Bratcher's No. 1 C. W. Johnson, 150 feet north and 3,960 feet east of the SW cor. of the Edward W. Sergeant Survey A-253. J. A. Dixon and others' No. 1 W. C. Cardwell, 450 feet south and 150 feet east of the NW cor. of the E half of Section 233, T.E.&L. C. Kleiner and others' No. 28 C. W. Langston, 1,050 feet south and 750 feet west of the NE cor. of the S half of Section 1,490, T.E. &L.

Republic Production Co.'s No. 3 H. F. Haygood, 450 feet north and 850 feet west of the SE cor. of the west 100 acres of the south 132 acres of Section 1,468, T.E.&L. Robertson Drilling Co.'s No. 5 F. M. Gillmore, 450 feet south and 1,320 feet east of the NW cor. of Section 14, Young County School Land, A-1,284. Shappell Oil Co.'s No. 6 D. Garrett, 790 feet north and 420 feet west of the SE cor. of the N half of Section 1,487, T.E. &L. Steed & Gaus' No. 1 R. W. Blackman, 150 feet south and west of the NE cor. of the north 30 acres of the west 80 acres of the R. Wilson Survey A-1,275. Same company's No. 1 L. A. Snider-A, 450 feet north and 150 feet west of the SE cor. of the W half of the south 80 acres of the Robert Wilson Survey A-1,276. A Strahan's No. 1 J. L. Boone, 500 feet north and east of the SW cor. of the SE of the NE of Section 1, B.B.B. &C., A-34. Trio Oil Co.'s No. 1 A. Williams, 750 feet north and 150 feet west of the SE cor. of the W. C. Adams Survey A-1,364. Wise & Jackson's No. 2 L. A. Snider, 750 feet north and 150 feet east of the SW cor. of the E half of the south 80 acres of the Robert Wilson Survey A-1,276. Hinson & Tidwell's No. 1 R. R. Mizzell & J. M. Perkins, midway east and west and 300 feet south of the north line of the R. F. Mitchell Survey No. 20, A-2,205.

Corrections

In Archer County: Estacado Oil Co. and others' No. 1 H. O. Prideaux, 150 feet north and west of the SE cor. of Lot 24, W. J. Fraley Subdivision, John Dorsey Survey A-122.

T. F. Hunter and others' No. 1 D. L. Bishop, 800 feet south and 1,150 feet east of the NW cor. of Section 52, G. P. Meade Subdivision, L. M. Pasture.

In Brown County: American Maracaibo Oil Co.'s No. 1 W. C. Duff, 150 feet north and 780 feet west of the SE cor. of W. C. Duff 63.3-acre tract out of R. Honeycutt Survey No. 623. J. Warren and others' No. 1 W. C. Duff, 150 feet north and 775 feet east of the SW cor. of the W. C. Duff 63.3-acre tract out of the R. Honeycutt Survey No. 623.

In Haskell County: Superior Oil Corp.'s No. 2 Reynolds Cattle Co., 1,790 feet south and 50 feet west of the NE cor. of the A. Rodriguez Survey A-350.

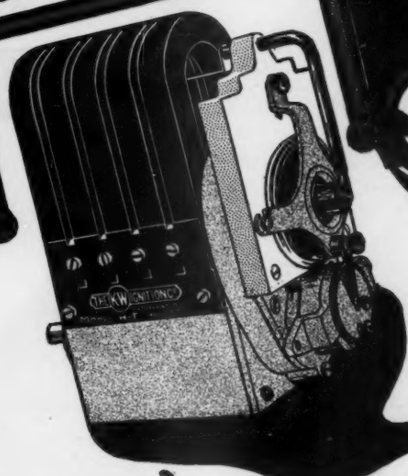
In Reagan County: Big Lake Oil Co.'s No. 50 University Land, 1,720 feet north and 920 feet east of the SW cor. of Section 1, Block 2, University Land.

In Throckmorton County: Humble Oil & Refining Co.'s No. 1 Mrs. M. E. Ledbetter, 200 feet southwest of the NE line and 200 feet northwest of the SE line of the SW 160 acres of the SE 320 acres of the A. J. Kemp Survey Abs. 1,369.

In Wichita County: F. B. Jackson, Jr., No. 1 T. F. Mitchell, 1,050 feet south and 150 feet east of the NW cor. of Lot

1909-1929

America's Finest-1909

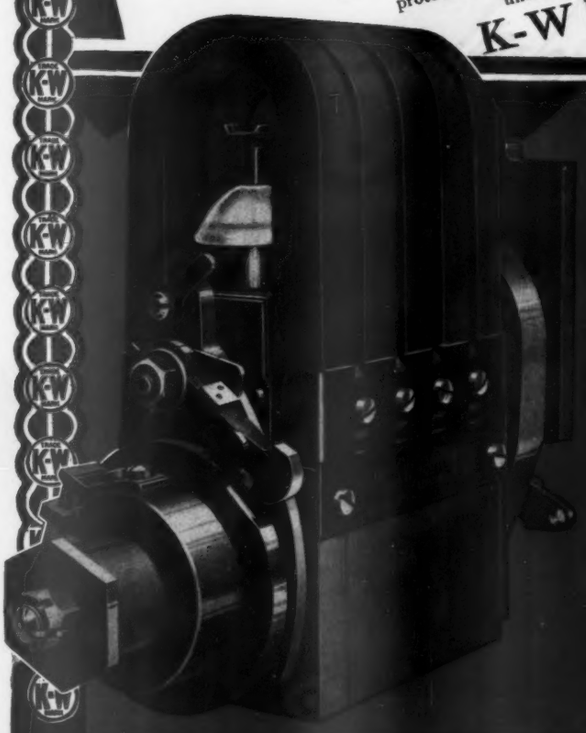


WHY Do You Purchase Accident and Life Insurance?

Rather a fool question, isn't it? You purchase it because you want protection when something happens. What protection have you got against Ignition Trouble—the "heart trouble" of your engine? You haven't got any unless you insist upon a

K-W HIGH TENSION MAGNETO

America's Finest, and that means it leads the world



Above is a portion of a page advertisement published July 4, 1909 — and today

TWENTY YEARS LATER THE K-W Magneto

whose use predominated in the Oil Fields all these intervening years is not only recognized still as "America's Finest" but has become universally known through service as

"A GIANT FOR POWER A BRUTE FOR ENDURANCE"

Models for every type of engine

MANUFACTURED BY THE K-W IGNITION CORP. CLEVELAND OHIO U.S.A.

OKLAHOMA-TEXAS REPRESENTATIVES MAGNETO IGNITION CORP. 306 E. SECOND STREET TULSA, OKLAHOMA

Thermoid
"OIL DRILLER" BELTING

Specially Constructed for ***STRENGTH FLEXIBILITY and WEAR*** *under the hardest oil-field Service*

SOME THERMOID OIL FIELD PRODUCTS

Brake Lining
Rotary Drill Hose
Transmission Belts
Balata Valves
Stuffing Box Rings
Rubber Sleeves, etc.

THERMOID RUBBER COMPANY *Factories and Main Offices,* TRENTON, N.J.

23, T. F. Mitchell Subdivision, P. Castleman Survey A-36.

In Wilbarger County: Richfield Oil Co.'s No. 1 W. T. Waggoner-C, 150 feet south and east of the NW cor. of the SW of the NE of Section 47, Block 3, H.&T.C.

OUTLINES CAUSES OF VAPOR LOCKING

(Continued from Page 46)

motor speed of about 300 revolutions per minute.

Tests Under Way

Tests are now under way to determine the effect of motor speed, carburetor and manifold design upon the effective volatility of fuels. These tests can be run off more rapidly than those reported above because we already know the relationship between the A.S.T.M. distillation and the effective volatility of the fuel as determined at a motor speed of 300 revolutions per minutes. Motor tests are now being conducted in a cold room which can be reduced to minus 40 degrees Fahrenheit in order to extend our data to include the ease of starting with fuels of different characteristics when the motor is cranked by the electric starter and storage battery.

Vapor Lock

The equipment and method of procedure used in making tests to determine the tendencies of various fuels to vapor lock in the carburetor was outlined in some detail in the report last year. The test car was further equipped with thermocouples in the vacuum tank and in the line leading to the carburetor, so that these temperatures could be recorded in addition to those considered previously.

Complete tests were made during the summer months to determine the probable maximum temperatures reached in warm weather as well as the temperatures at which the different fuels caused trouble. These tests were supplemented by a limited number of tests during the winter months at temperatures as low as minus 10 degrees Fahrenheit. Data so obtained enables us to estimate with a fair degree of precision the probable maximum temperatures reached in various parts of the fuel system for different atmospheric temperatures, as well as the temperatures at which the various fuels caused trouble due to the formation of vapor.

Road Tests

When making such road tests many variables are introduced which can be avoided in careful laboratory work. As reported last year it was found that most fuels would operate the car in a satisfactory manner when fed to the carburetor under pressure, even though vapor-locking badly when supplied through the vacuum tank. At that time it was thought that this apparent discrepancy was due largely to the fact that the temperature of the gasoline in the carburetor was materially lower under pressure feed conditions. Further work indicates that a fuel may be heated to higher temperatures without causing trouble when fed to the carburetor under pressure. Thus there are two factors both favoring the pressure feed system as being more free from vapor lock.

As reported last year, many fuels function properly when fed through the vacuum tank under conditions of steady driving. But after the car had been stopped for even a brief interval these fuels may vapor-lock badly. Careful observation indicated that the fuel in the line leading from the vacuum tank to the carburetor becomes heated to high temperatures when the car is stopped (frequently 220 degrees Fahrenheit) and that the vapor so formed bubbles up into the vacuum tank so as to be clearly audible to the observers in the car. It was found that the gasoline drained from the vacuum tank after stopping under these conditions possessed a higher vapor pressure than the fresh gasoline supplied from the tank at the rear of the car.

Because of these uncontrolable variables found in our road tests, the temperature at which the various gasolines caused trouble are carefully checked in the laboratory. These tests consist in operating the motor at constant speed corresponding to about 35 miles per hour with the throttle about two-thirds open, the cooling water at 160 to 165 degrees Fahrenheit and air temperature at 165 degrees Fahrenheit. Under these conditions the temperature of the gasoline in the bowl of the carburetor is raised by an electric heater on the outside of the bowl. The action of the gasoline as it passes through the jet can be determined by observation through the glass carburetor. Temperatures taken by the thermocouples as indicated are recorded as follows:

1. When bubbles first appear in the fuel stream.
2. When the vapor bubbles become sufficiently large to effect the running of the motor.
3. When the motor stops.
4. When boiling of the gasoline in the bowl of the carburetor occurs.

Laboratory Tests

As air temperatures above 200 degrees Fahrenheit are frequently observed in road tests, another series of laboratory tests with the air at 205 degrees is run in a similar manner. Other series at lower and higher speeds are also run to determine the effect of speed on the tendencies of the fuels to vapor lock.

The temperature of the air supplied to the carburetor is an important factor, particularly when above 180 to 200 degrees. In fact we found that extremely hot air (about 250 degrees Fahrenheit) heats the fuel in the jet passage to such temperatures that vapor-locking occurs even when the fuel in the bowl of the carburetor is not heated at all. In addition to this action, hot air also tends to heat the entire carburetor thereby further raising the temperature of the gasoline.

Our experience entirely confirms that of J. L. Clayden who emphasized the importance of moderate air temperatures surrounding and supplied to the carburetor, at the Washington conference on proposed changes in the federal specifications for motor fuel.

The mechanism of bubble formation in the passage of the carburetor was discussed in the report last year and need not be further considered at this time.

Results

Two years ago it seemed that the association was favoring the Beistle vapor pressure bomb. For this reason the tests reported last year were related in so far as possible to the Beistle vapor pressure. Since that time the association has adopted the Reid vapor pressure bomb, which is used as the basis of comparison in the present report. In addition to this commercial vapor pressure test an accurate laboratory apparatus was developed and described last year in which it is possible to determine the vapor pressure of the gasoline at different vapor-liquid ratios.

Observation of the formation of bubbles in the glass carburetor indicated that vapor locking was not evident unless the volume of the vapor in the fuel passage was about two or three times the volume of the liquid. For this reason accurate vapor pressure data were obtained for a number of the fuels used in our vapor lock determinations, in this apparatus at different vapor-liquid ratios.

Table 1 gives a summary of these data as obtained on nine representative fuels.

Vapor-Liquid Volume

In all cases the temperature at which the vapor-liquid volume ratio is 2 indicates the lowest temperature at which the first evidence of possible trouble was observed. This corresponds to the statement made above that no trouble is experienced unless the volume of vapor flowing through the jet is approximately two or three times that of the liquid volume. The temperature at which the Reid vapor pressure is equal to atmospheric corresponds rather closely to the temperature at which definite vapor lock is first observed. By definite vapor lock is meant clearly distinguished trouble or erratic performance of the motor.

This latter relationship is clearly indicated in Figure 3 in which the temperature at which the fuel first gives evidence of possible trouble, and the tem-

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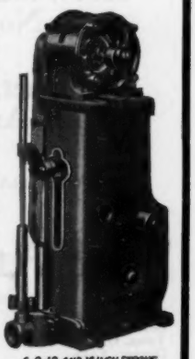
PIPE FOR ALL PURPOSES

MYERS SELF-OILING POWER PUMPS
ANSWER EVERY CALL FOR DEPENDABLE LOW COST WATER SERVICE

Every operator in the oil or gas industry at some time or other becomes a purchaser of new pumping equipment. While Myers Self-Oiling Power Pumps are not adapted to every requirement in this particular field, where the volume of water to be pumped hourly does not exceed ten thousand gallons there is a style and size that will fit into your operating equipment perfectly and place your water problems on a highly economical basis.

Search the entire field for pumping advantages that will compare with those of Myers Self-Oiling Power Pumps. They are not to be found. Then why not get the facts before you purchase? Yes—Myers Self-Oiling Power Pumps do make quite a difference in water service. If you doubt this, ask any one of the thousands of satisfied users. Positive self-lubrication, housed working parts, improved method of power application, extra large valves, higher speed, increased volume, lower maintenance costs—all are responsible for the splendid record they have established for themselves everywhere.



Take Off Your Hat To The MYERS
PUMPS-WATER SYSTEMS-HAY TOOLS-DOOR HANGERS

There is a jobber or supply house nearby who will be glad to supply you with Myers Self-Oiling Power Pumps. If you prefer, write us direct.

6-8-12 AND 18 INCH STROKE WITH OR WITHOUT MOTOR

THE F.E.MYERS & BRO. CO. ASHLAND, OHIO.
Manufacturers for over Fifty Years of MYERS HONOR-BILT PUMPS for Every Purpose
WATER SYSTEMS-HAY and GRAIN UNLOADING TOOLS-BARN, FACTORY and GARAGE DOOR HANGERS-STORE LADDERS, ETC.

The "American" Oil Well Pumping Jack!

The "American" Totally Enclosed Oil Well Pumping Jack has been designed in answer to the demand for the efficient pumping of individual wells.

American Jacks are made in four sizes—twelve inch to fifteen inch stroke, fifteen inch to eighteen inch stroke, eighteen inch to twenty-two inch stroke, and thirty inch to thirty-six inch stroke. All gears are totally enclosed and run in a bath of oil which floods the bearings, insuring smooth operation and long life. The head proper may be disengaged from the cable and swung back from the walking beam, permitting the rods to be pulled without moving the jack itself. There are no screw mechanisms or adjustments necessary. No gears are exposed.

Compact, sturdy and economical in operation! Ask for bulletin 181.

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perature at which the fuel shows definite vapor lock are plotted as a function of the temperature at which the Reid vapor pressure is atmospheric.

The vapor pressure curve of hydrocarbons may be approximately represented by straight lines if the log of the pressure is plotted against the reciprocal of the temperature. This fact suggested the plot shown in Figure 4 in which the log of the temperature at which the fuel gives first evidence of trouble or definite vapor lock is plotted as a function of the reciprocal of the Reid vapor pressure in pounds per square inch at 100 degrees Fahrenheit. From Figure 4 it is clear that such a relationship may be used with an accuracy not much less than the experimental accuracy in making vapor lock determinations.

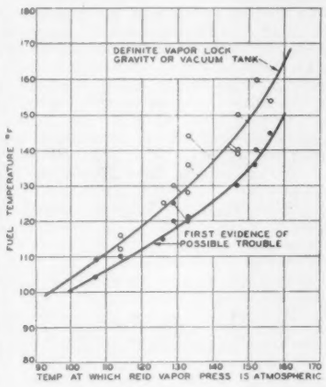
DEFINITE VAPOR LOCK GRAVITY OR VACUUM TANK
FIRST EVIDENCE OF POSSIBLE TROUBLE
FUEL TEMPERATURE °F
TEMP AT WHICH REID VAPOR PRESS IS ATMOSPHERIC

Figure 3—Fuel temperature at which vapor locking occurred.

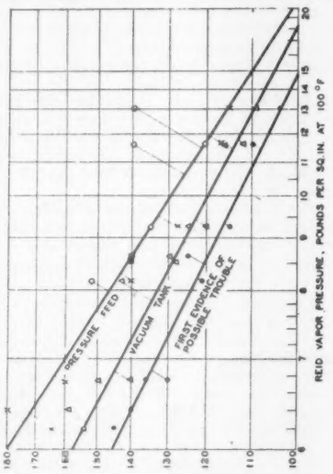
PRESSURE FEED
VACUUM TANK
FIRST EVIDENCE OF POSSIBLE TROUBLE
REID VAPOR PRESSURE, POUNDS PER SQ. IN. AT 100 °F
Fuel Temperature °F.

Figure 4—Vapor lock under varying conditions.

These relationships shown above are not as satisfactory as the direct relationship between the vapor-locking temperature and the temperature at which the vapor-pressure is atmospheric with a vapor-liquid volume ratio of 2. But the relationships shown in Figures 4 and 5 are more satisfactory than any relationship depending upon the gas-free vapor pressure or upon any point on the A.S.T.M. distillation curve.

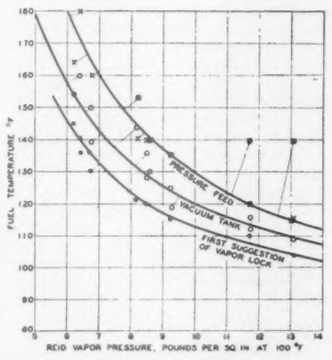
PRESSURE FEED
VACUUM TANK
FIRST SUGGESTION OF VAPOR LOCK
FUEL TEMPERATURE °F
REID VAPOR PRESSURE, POUNDS PER SQ IN AT 100 °F

Figure 5—Vapor lock under varying conditions.

It has been suggested by O. C. Bridgeman of the Bureau of Standards that the temperature at which the fuel exerts atmospheric vapor pressure when free from dissolved water and gases is the same as the temperature of the 10 per cent point on the A.S.T.M. distillation curve when plotted with the loss at the lower end. He has also suggested that this temperature corresponds to the temperature at which the fuel may be expected to cause trouble due to vapor locking. If this relationship were as satisfactory as that reported in Figures 3, 4 and 5 it would prove of considerable practical value. However, any attempts that we have made to relate the temperatures of the 10 per cent point with that at which vapor-lock is observed, have proven rather unsatisfactory.

This may be due to the fact that the relationship between gas-free vapor pressure and vapor-locking temperature is not satisfactory, or to the fact that the 10 per cent point is not an accurate indication of the vapor pressure of the fuel. Bridgeman has recently suggested another relationship in which the slope of the A.S.T.M. distillation at the 10 per cent point is included as one of the variables. Although this will undoubtedly improve the relationship between the 10 per cent point and the gas free vapor pressure, it will probably have little effect in improving the relationship with vapor-locking temperature, because the tendency of a fuel to form vapor depends upon the dissolved gases in the fuel as well as upon the gas-free vapor pressure.

Relation of Fuel Temperature to Atmospheric Temperature

It is generally recognized that the temperature of the gasoline in the carburetor depends to no small degree upon the atmospheric temperature. Figures 6 7, 8, 9 and 10 indicate the effect of atmospheric temperature upon the probable maximum temperatures reached in

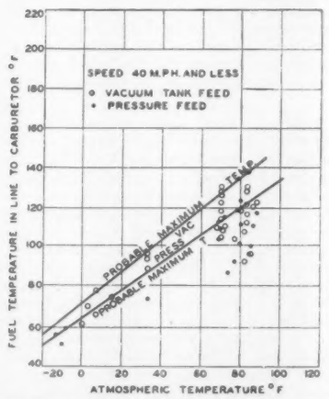

Figure 6—Correlation of atmospheric and fuel temperatures and the effect on vapor locking.

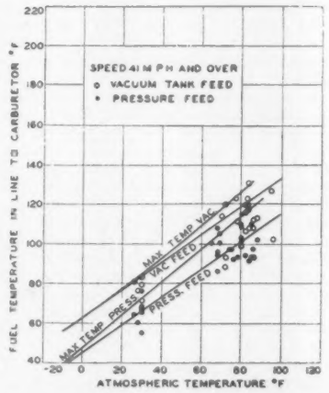

Figure 7—Effect of changing atmospheric temperatures with respect to fuel temperature in line to carburetor.

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Subsidiary of United States Steel Corporation
NATIONAL

A.P.I. SEAMLESS DRILL PIPE

the line, bowl and jet of the fuel system of the test car under different driving conditions.

These temperatures do not indicate the maximum temperature attained when the car is stopped after a period of hard driving but rather the maximum temperatures

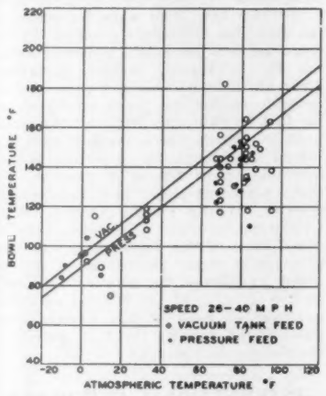


Figure 8—Effect of changing atmospheric temperature with respect to bowl temperature. Speed 26 to 40 miles per hour.

attained while the car is actually being driven.

After driving for 60 or 70 miles per hour for some time, the temperature of the gasoline in the line leading to the carburetor frequently reaches 220 to 230 degrees Fahrenheit in from three to seven

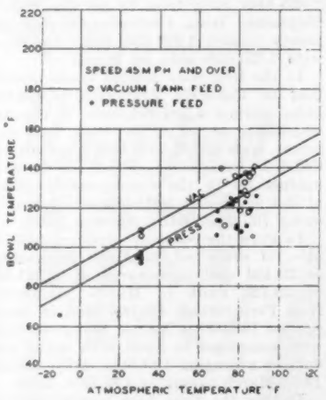


Figure 9—Effect of changing atmospheric temperature with respect to bowl temperature. Speed 45 miles per hour.

minutes after the car is stopped. If the gasoline boils out of this line even higher temperatures may be recorded. Under similar conditions the temperature in the bowl may reach 150 to 185 degrees

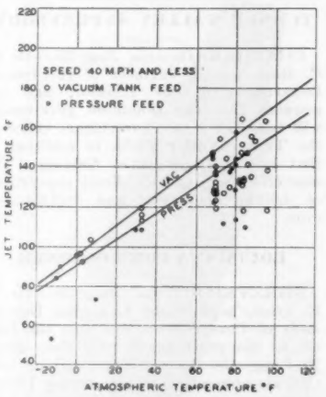


Figure 10—Effect of changing atmospheric temperature with respect to jet temperature at speed of 40 miles per hour.

Fahrenheit depending upon the fuel being used. If the fuel has a low boiling point vaporization of the fuel limits the maximum temperature. Temperatures in the jet are usually similar to those observed in the bowl but may reach higher figures because the jet contains little gasoline to be vaporized by the absorption of heat.

Probable Fuel Temperatures

In considering the data shown in Figures 6 to 10 it should be remembered that these temperatures were obtained on a car which is probably the worst offender in overheating the carburetor and gasoline. In general the temperatures encountered in carburetors corresponds approximately to the temperature observed in the fuel line as indicated in Figures 6 and 7. For this reason these figures should be used in estimating the probable fuel temperatures to be encountered under different weather conditions. The temperature indicated for the bowl and jet represent the maximum temperatures found only on those cars which are poorly designed from the standpoint of keeping fuel temperatures within reason.

As has been suggested before the problem of vapor lock is largely one of proper design of fuel system so that the gasoline does not become heated to high temperatures until after it has left the jet of the carburetor. The present layout of some of the new automobiles clearly indicate that designers have become careless in this regard due to the low vapor pressure of gasolines which have been marketed from 1918 to 1926. In some of these models the fuel line leading from the rear tank passes along the frame of the car adjacent to the exhaust pipe. In fact in one case it was found impossible to place the fingers between the fuel line and the muffler. The importance of design is now being brought to the attention of the motor car manufacturers and some improvement should be expected in the next models.

Pressure Feed System

The use of pressure feed systems alone will probably make possible the satisfactory use of fuels having a vapor pressure of about 1 to 1½ pounds higher than could be used satisfactorily with the conventional feeding system. (See Figures 4 and 5.) In the May issue of the Society of Automotive Engineers Journal the following statement is found in the advertisement of a new mechanically driven fuel pump:

"A further advantage of this design is its ability to handle vapors caused by underhood temperatures, increasing by 100 degrees the effective range in which gasoline can be pumped." Whether or not entire confidence can be placed in this claim, at least it clearly indicates that automobile manufacturers recognize

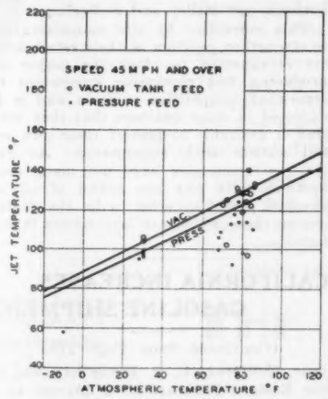
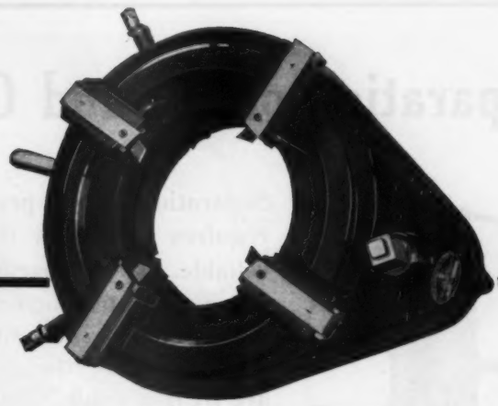


Figure 11—Effect of changing atmospheric temperature with respect to jet temperature at speed of 45 miles per hour.

the importance of being able to handle fuels of high vapor pressure.

With a combination of improved design of fuel systems, or plumbing as we may popularly call it, and the use of pressure feed systems, we may expect to use satisfactorily, fuels of 12 pounds Reid vapor pressure at 100 degrees Fahrenheit under most normal weather conditions, and possibly as high as 15 pounds vapor pressure in cold weather.

By use of the charts shown as Figures 6, 7, and 4 or 5, the tendency of a fuel to vapor lock under normal conditions of operation may be estimated



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—a "TOLEDO" No. 80 Automatic Pipe Cutter will do the work quicker, easier and always leave a straight, square-end cut without burr.

"TOLEDO" Automatics No. 40, capacity 2" to 4", No. 80, capacity 4½" to 8", are the most perfect large pipe cutters on the market today, hand operated or driven by "TOLEDO" Power Drive. A post card brings further information.

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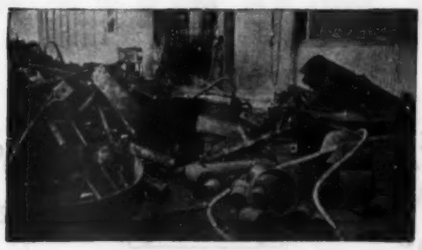

Equipment like this costs money

PIPE fittings, fishing tools, valves and other parts, lying about in the salvage yard represented a substantial investment when new. And many of these parts would still be serviceable, would still yield a return, if stripped of accumulated dirt and oil.

You can remove every trace of muck and grease quickly and with little effort the Oakite way. No scrubbing or scraping. A short soak in a solution of an Oakite material, a brief rinse, and parts are clean to the metal.

Our Service Man in your locality can show you how much time and work Oakite cleaning saves. Write and ask to have him call. No obligation.

Oakite Service Men, cleaning specialists, are located in the leading industrial centers of the U. S. and Canada.

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OAKITE
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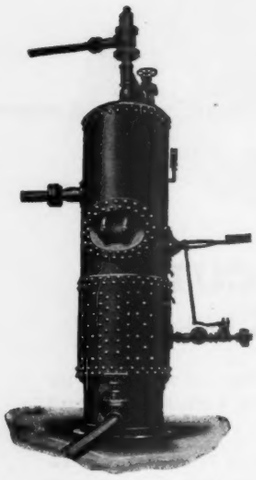
Industrial Cleaning Materials and Methods

Separation of Oil and Gas



Separation under pressure requires apparatus that is reliable. If a separator is taken out of use for repairs, it may mean a loss of production, while the repairs are being made. Trumble construction makes it possible to change a valve or repair one while the separator is still in use.

Our experience is completely at your disposal.

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LOS ANGELES, CALIFORNIA

ALBERTA, MONTANA AND WYOMING
Great Northern Tool & Supply Co., Billings, Montana

Venezuelan Representative:
Johnson and Schnitter Apartado 324, Maracaibo, Venezuela

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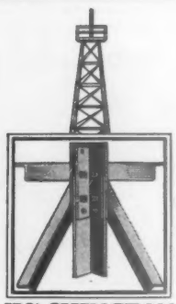

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—when invested in Washington Structural Steel Derricks. The buyer who takes into consideration the length and character of service rendered, gets not only his dollar's worth, but also an extra dividend in thorough satisfaction. Many such buyers see that their drilling equipment includes Washington Steel Derricks because they know they'll get a dollar's worth for every dollar they spend. Some of our derricks have already drilled more than 25 wells and are still on the job. Washington Steel Derricks represent investments in indefinite use and practical indestructibility.

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Western Representative:
Rig Equipment Co., 1524 So. St. Louis St. Tulsa, Okla.

WASHINGTON STRUCTURAL STEEL DERRICKS

with sufficient accuracy for all practical purposes. Specially severe conditions may be handled by using charts shown as Figures 8, 9 or 10.

STATIONS TURNED OVER TO CHAIN COMPANIES

(Continued from Page 178)

will also be handled by these service stations. Accessories are to be supplied by Chanslor & Lyons Stores, Inc.

There is also understood to be probability that San Francisco Gasoline Stations, Inc., Bay Counties Gasoline Stations, Inc., Southern Gasoline Stations, Inc., and the other companies being formed to handle Standard Oil Co.'s stations, will eventually put in similar stocks of accessories. More than 500 stations now are being operated in California by these operating companies formed to handle Standard Oil, Shell Oil and Richfield-Pan American stations and this system, which is rapidly spreading, is expected practically to end the former plan of leasing stations to individual operators. T. A. Winter & Co. is the firm which has taken over Richfield-Pan American stations. Whether they also will install departments for accessories is not yet known.

Standard Oil Plan

In case of Standard Oil Co. of California it is expected that eight operating companies will take over all its stations which formerly were leased to individuals. The parent company will retain and operate one or two stations in each marketing area.

Possibility of important combinations under which certain brands of tires, gasoline, motor oils, batteries and automobile accessories may be sold by chains of superservice stations is seen by observers in recent activity of Goodrich, Firestone, Miller and other leading tire manufacturing companies in starting chains of such stations usually on location with oil service stations. These superstations will feature such sidelines as auto laundering, brake service, lubrication, electrical service and repairing.

Firestone Program

Firestone has launched an extensive building program since the recent trip of Harvey S. Firestone through the Pacific Coast territory, the company's plan being chiefly to finance Firestone dealers in erection of superservice stations. It is reported that about 150 such stations will be erected throughout the country. Other tire manufacturers reported as interested in putting dealers into this business are Miller and Seiberling.

This movement by tire manufacturers to strengthen position of their retail dealers is expected to place the major oil producing and marketing companies in somewhat competitive position and it is expected in some quarters that they may find it desirable to protect their own retail outlets with superservice. As yet the tire companies have not made connections with any one brand of oil or gasoline, being satisfied to let the dealer choose those which are best sellers in his locality.

CALIFORNIA INCREASES GASOLINE SHIPMENT

(Continued from Page 178)

year, California U. S. Motor has sold on the Eastern Seaboard at a quarter to a half cent per gallon over the prevailing prices for Eastern and Southwestern gasolines in these same markets. The differential has now been generally eliminated, and in view of the intensified competition which is already developing for gallonage in the East this year, it is an open question as to whether marketers will be able again to get a premium for the California gasoline. In most marketing circles the belief is expressed that it will be impossible to continue to market the California product at a premium in the East. Not only will the sharper competition for gallonage preclude this, it is contended, but Eastern and Gulf refiners have made such radical improvements in the quality of their motor gasoline during the past year that the California product no longer possesses as great a degree of superiority over other gasolines as has been the case for the past several years.

All California Gasoline

California gasoline is being marketed in East Coast territory this year, as a straight California product, for the first time. Thus far, notwithstanding the many bids which have been made for outlets in the East for California gasoline, Pacific Coast refiners have been generally adhering to the regular market quotations. They are able to maintain their market, notwithstanding the heavy stocks of motor fuel in California, through the strong position which their market has been placed in through the diversion of considerable export buying of gasoline, normally placed at East Coast and Gulf refineries, to the Pacific Coast. While California refiners, it is true, have secured some of this business on the basis of price, a larger percentage of this demand has found its way to California on the strength of the natural antiknock qualities of most of the Pacific Coast gasoline, as well as the high gravity of the California product.

INTERNATIONAL PETROLEUM

International Petroleum Co., Ltd., controlled by Imperial Oil, Ltd., a subsidiary of Standard Oil Co. of New Jersey, produced 1,623,448 bbls. of crude oil in Colombia, average of 54,115 bbls. daily, during April, compared with 1,677,011 bbls. or 54,098 daily in March.

Seven wells were completed by the company in April, with daily average initial production of 658 bbls., compared with 1,035 bbls. daily from 10 wells in March. Shipments from Cartagena during the month totaled 1,627,355 bbls., compared with 1,731,099 bbls. in March.

In the first four months crude production in Colombia aggregated 6,474,030 bbls., against 6,584,494 bbls. in the corresponding period of last year, and shipments were 6,161,335 bbls., against 5,642,695. Completions numbered 32 wells against 39 in the corresponding period of last year, with initial production averaging 795 bbls. daily, against 1,263.

In Peru the company produced 882,714 bbls. of crude oil in April, an average of 29,424 daily, compared with 921,380 or 29,722 daily in March. Shipments from Peru totaled 448,004 bbls. in April, against 193,969 in March. Seventeen wells were completed in April with initial production averaging 139 bbls. daily, against 10 in March averaging 146 bbls. daily.

During the first four months production of crude in Peru totaled 3,399,420 bbls., against 2,681,702 in the corresponding period of last year. Shipments were 1,453,159 bbls., against 670,805. Wells completed numbered 57, averaging 143 bbls. daily, against 36 in corresponding period last year with initial production averaging 110 bbls. daily.

TURNER VALLEY SUPERVISION

CHATHAM, Ontario, June 29.—Dr. C. C. Ross, mining engineer of the federal Department of the Interior, has announced that the Dominion government will establish a new government office in the Turner Valley Field, in addition to that now maintained in Calgary. The new office will provide direct supervision of drilling operations and drilling records.

LOUISIANA COMMISSIONER

SHREVEPORT, La., June 29.—Dr. V. K. Irion, head of the Louisiana Department of Conservation, has won the first tilt of his court battle with Gov. Huey P. Long, the district court having held that his appointment by Governor Long's predecessor was for the full term of four years and not limited by the expiration of the administration under which he was appointed. Governor Long appointed Robert Maestri of New Orleans to the conservation post, but Doctor Irion refused to vacate and instituted legal proceedings to retain the office. The case is now in course of appeal to the state Supreme Court.

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Wherever oil well Sucker Rods are "equipment," not *"tools,"* performance is the subject of conversation among production men, and Jones Sucker Rods always come in for a good word.

"No matter whether 2000 or 6000 feet never a failure" is the invariable tribute to Jones H. M. Sucker Rods among hundreds of successful oilmen.

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And of course there's a reason behind these advantages which have made Jones Sucker Rods famous — special high manganese steel, for example, which gives Jones Rods 150% greater fatigue resistance and an *improved* design which has always marked Jones as the standard sucker rod of the petroleum world for many, many years.

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DURAMETALLIC PACKINGS

WILDCAT OPERATIONS IN KANSAS

(Continued from Page 52)

HARPER COUNTY

Tom Slick Oil Co.'s No. 1 Thompson, NW cor. Sec. 10-32-6w ..... Rig.
Independent & Reserve Oil Co.'s No. 1 Moulds, C NE Sec. 7-24-1w ..... Drlg. 1,845 ft.

HARVEY COUNTY

Deering-Marshall's No. 1 Dick, Sec. 4-25-2w ..... Fishing 2,345 ft.
McCulloch et al's No. 1 Prouty, NW cor. SW Sec. 2-23-1w ..... Drlg. 1,925 ft.
Roth & Parrent's No. 1 Brombrowsky, NW cor. Sec. 26-22-1e ..... Fishing 2,415 ft.
Mrs. Gay et al's No. 1 Grove, C NW NE NW Sec. 29-23-1w ..... Shut down 3,012 ft.
Slick & Cornell's No. 1 Gatz, NW cor. SE Sec. 36-22-1e... Drlg. 3,320 ft.
Jolly & Ogg's No. 1 Randall, NE cor. NE Sec. 11-24-1w.. Shut down 3,444 ft.
Patton et al's No. 1 Dunning, SE cor. SW NE Sec. 26-24-1. Drlg. 3,310 ft.
Rosenthal et al's No. 1 Ingalls, C NW SW Sec 24-23-3w.. Underreaming 2,370 ft.
Jolly & Ogg's No. 1 Hupp, SE cor. NE Sec. 22-23-1w .... Fishing 3,220 ft.

HODGEMAN COUNTY

Phillips Pet.'s No. 1 Hausman, NW NE Sec. 30-22-22w .. Rig.

JEFFERSON COUNTY

Wichita Oil Co.'s No. 1 Simpson, NW cor. SW SW Sec. 19-10-17 ..... Rigged up and shut down.

KINGMAN COUNTY

Gypsy Oil Co.'s No. 1 Kincaid, NE cor. NW Sec. 18-29-5w ..... Drlg. 4,010 ft.

LANE COUNTY

Robinson's No. 1 Dickerson, Sec. 11-18-27w ..... Shut down 2,650 ft.
Blankenship Pet. Co.'s No. 1 Schaeffer, NE cor. NE Sec. 24-16-28w ..... Spudded and shut down.

MARSHALL COUNTY

Skelly Oil Co.'s No. 1 Mehl, NW NE Sec. 11-20-4e..... Drlg. 1,400 ft.
Irwin et al's No. 1 Cooper, NE NW Sec. 10-3-7e..... Shut down 2,240 ft.
Empire O. & R. Co.'s No. 1 Scally, SW NE NE Sec. 28-19-2e ..... Drlg. 2,915 ft.

MARION COUNTY

Shell Pet. Corp.'s No. 1 Scully, NW NE Sec. 34-18-2e .... Drlg. 140 ft.
Hobworth et al's No. 1 Skiles, SE NW NW Sec. 30-21-3e.. Drlg. 2,265 ft.
Connell & Prairie's No. 1 Zirak, SE cor. SW Sec. 3-18-3e ..... Drlg. 2,843 ft.
General Utilities Co.'s No. 1 Propp, NE cor. SE SW Sec. 8-19-4e ..... Rig.
Frank L. Moore's No. 1 Miller, NE cor. NE Sec. 26-19-1.. Drlg. 3,003 ft.

McPHERSON COUNTY

E. W. Marland's No. 1 Swanson, NE SW NE Sec. 36-18-4w. Rig.
Slick, Pryor & Lockhart's No. 1 Gratton, C NE NW NW, Sec. 34-20-3w ..... Drlg. 1,135 ft.
Helmerich & Payne's No. 1 Klassen, SE NE NE Sec. 14-21-1w ..... Shut down 417 ft.
McPherson Oil & Gas Co.'s No. 1 Decker, C SE Sec. 11-19-2w ..... Drlg. 2,840 ft.
Helmerich & Payne's No. 1 Rosen, NE cor. SE SW Sec. 25-21-2w ..... Drlg. 2,562 ft.
McPherson Gas Co.'s No. 1 Chinberg, NW cor. Sec. 18-19-2w ..... Drlg. 2,300 ft.
McPherson O. & G. Co.'s No. 1 Rasmusson, SW cor. Sec. 8-18-3w ..... Drlg. 1,620 ft.
Ted Washabaugh's No. 1 Vosshell, NE cor. NE Sec. 9-21-3w ..... Fishing 3,301-04 ft.; show of oil.
McPherson Gas Co.'s No. 1 Reitz, NW cor. SE SW Sec. 1-20-2w ..... Drlg. 2,905 ft.
J. H. Tatlock's No. 1 Hayer, C SW NE Sec. 32-20-1w.... Drlg. 2,965 ft.

NORRIS COUNTY

Hiatt et al's No. 1 Blythe, NW NE Sec. 15-5e..... Shut down 2,227 ft.

NESS COUNTY

E. W. Marland, Inc.'s No. 1 Moses, NE SE Sec. 7-18-25w. Rig.
Barnsdall Oil Co.'s No. 1 Lauk, C SW Sec. 35-18-21w....4,224-29 ft.; 100 oil, 100 water; testing.

OSBORNE COUNTY

Phillips Pet. Co.'s No. 1 Greive, NW SE NE Sec. 6-7-12w. Rig.
Mid-Kansas' No. 1 Boyce, SE cor. NW Sec. 18-6-13w.... Shut down 300 ft.
Trees Oil Co.'s No. 1 Payenter, NE cor. SE SE Sec. 22-6-15 ..... Drlg. 2,410 ft.
S. D. Jarvis' No. 1 Jellison, SE cor. SE Sec. 13-10-15w... Drlg. 3,410 ft.

OTTAWA COUNTY

Anderson et al's No. 1 Bank, NE cor. NW Sec. 28-10-2w.. Shut down 3,690 ft.

PAWNEE COUNTY

F. C. Troupe's No. 1 Lovett, CEL NE NE Sec. 31-21-16w. Shut down 1,560 ft.

PHILLIPS COUNTY

Watsonian-British American's No. 1 Weilman, C SW SW Sec. 34-2-19w ..... Drlg. 2,450 ft.

PRATT COUNTY

O'Haver & Jones' No. 1 Lunt, C SW NW Sec. 15-28-14w.. Fishing 2,540 ft.
Empire O. & R. Co.'s No. 1 Henderson, SW cor. Sec. 35-26-4w ..... Drlg. 3,535 ft.

RENO COUNTY

Skelly Oil Co.'s No. 1 Birkett, NE SW Sec. 30-24-7w.... Spudding.
Perry et al's No. 1 Oswald, NE cor. NE SE Sec. 30-22-5w ..... Drlg. 3,724 ft.
Milmar Oil Co.'s No. 1 Strickley, SW cor. SW Sec. 17-26-5w ..... Fishing 2,550 ft.

RICE COUNTY

Allison & Fitzwilliams' No. 1 Poland, NE cor. SW NE Sec. 36-19-8w ..... Cellar.
Higgins & Steinbuchel's No. 1 Shurr, NE cor. SW Sec. 21-20-10w ..... Drlg. 2,570 ft.

RILEY COUNTY

Derby & Shaw's No. 1 Lindstrom, NE cor. Sec. 32-7-5e.. Drlg. 350 ft.

RUSSELL COUNTY

Allison & Fitzwilliams' No. 1 Mohenny, NW SE Sec. 5-14-12w ..... Shut down 2,875 ft.
Phillips Pet. Co.'s No. 1 Saiback, SE NW Sec. 32-12-14w ..... Drlg. 3,308 ft.
T. B. Slick's No. 1 Sellans, SW cor. NE Sec. 36-15-13w... Drlg. 3,337 ft.

ROOKS COUNTY

Kruger et al's No. 1 Stels, NW SE SW Sec. 12-9-16w.... Shut down 50 ft.
Burford-Brim's No. 1 Toxa, Sec. 22-9-17w..... Spudded; shut down.
Prairie O. & G. Co.'s No. 1 Gick, SE cor. Sec. 22-9-19w.. Drlg. 3,715 ft.

RUSH COUNTY

Sinclair Oil & Gas Co.'s No. 1 Seur, C SW NW NW Sec. 8-18-17w ..... Drlg. 2,740 ft.
Danciger Oil Ref. Co.'s No. 1 Swindt, SW cor. Sec. 22-17-17w ..... Drlg. 3,170 ft.
Barnsdall Oil Co.'s No. 1 Brock, C SE SE Sec. 21-17-17w ..... Drlg. 3,080 ft.
Central Commercial Oil Co.'s No. 1 Brock, SE cor. SW SW Sec. 12-17-16w ..... Shut down 50 ft.
Danciger Oil Ref. Co.'s No. 1 Poland, NE cor. SW NE Sec. 17-19-17w ..... Drlg. 3,515 ft.
Wilcox Oil & Gas Co.'s No. 1 Schwartzkopf, NE cor. NW SW Sec. 27-17-17w ..... Granite 3,597-3,730 ft.; abandoned.
Wilcox O. & G. Co.'s No. 1 Woodward, NE cor. NE Sec. 35-27-17w ..... Drlg. 3,747 ft.

SALINE COUNTY

Templeman's No. 1 Lanbengager, C SW Sec. 20-15-5w .. Rig on ground.
Kinney-Coastal's No. 1 Hughes, NW NE NW Sec. 20-13-4w ..... Shut down 50 ft.
Dixie Oil Co.'s No. 1 Muir, C SW SE Sec. 6-15-2w..... Underreaming 8-in. csg. 2,672 ft.
M. Estey et al's No. 1 Peterson, C NE Sec. 6-16-5w..... Abandoned.
Boyle et al's No. 1 Miller, SW cor. SE Sec. 21-16-1w.... Drlg. 3,168 ft.
Kenney-Coastal Oil Co.'s No. 1 Beal, C NW Sec. 23-14-5w ..... Drlg. 3,600 ft.

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The packing for the fluid end of the pump should be selected because of its resistance to the fluid it comes in contact with.

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APPRAISALS
REPORTS-COMMERCIAL & TAX

SURVEYS
ESTIMATES OF OIL RESERVES

AN EXPERIENCED OIL FIELD ORGANIZATION

SEDGWICK COUNTY

Marland and Amerada's No. 1 Sensroth, NW cor. Sec. 25-28-4w ..... Rig.
Boyle's No. 1 Sandusky, NW NE SE Sec. 34-26-1w ..... Rig.
Lario O. & G. Co.'s No. 1 Calkins, SW cor. SE Sec. 7-27-2e ..... Rig.
E. W. Marland's No. 1 Huggins, SE NW SW Sec. 30-27-2 ..... Rig.
Johnson & Marshall's No. 1 Roy, NE cor. SE SW Sec. 23-29-1w ..... Drlg. 1,505 ft.
Lario O. & G. Co.'s No. 1 Teachorff, NE cor. SW Sec. 27-29-1w ..... Drlg. 745 ft.
Kyle et al's No. 1 Pinney, SW NW SE Sec. 29-28-1w.... Shut down 50 ft.
Simmons & Canary's No. 1 Scott, NE NW NE Sec. 22-26-1e ..... Drlg. 1,960 ft.
T. B. Slick's No. 1 Rosenhagen, SW SE NE Sec. 33-27-4w ..... Underreaming 6-in. csg. 3,750 ft.
Hammond & Stout's No. 1 Roeder, SW NW Sec. 23-27-2w ..... Drlg. 2,275 ft.
Twist et al's No. 1 Armstrong, NE NW Sec. 28-26-1e.... Rig; spud; shut down.
Shawver et al's No. 1 Scott, SE cor. SW SW Sec. 10-28-1e ..... Drlg. 2,895 ft.
Barnett O. & G. Co.'s No. 1 Davidson, NW cor. NW SW Sec. 27-26-1e ..... Shut down 2,668 ft.
Kellar & Lewis' No. 1 Buckles, NW cor. SE Sec. 3-28-1w.. Drlg. 845 ft.
Magnolia Pet. Co.'s No. 1 Wise, NW cor. NW Sec. 36-28-2w ..... Drlg. 3,730 ft.
Blankenship et al's No. 1 Tuttle, SW cor. NW Sec. 1-27-1 ..... Hole full water 3,397-3,410 ft.; P. B. to 2,988 ft.
Twist et al's No. 1 Joseph, CNL SW SE Sec. 4-25-1w... Shut down 1,980 ft.
Miller Wents' No. 1 Shaffer, NE cor. NE Sec. 9-27-2w... Drlg. 3,180 ft.
Kroder et al's No. 1 Harden, SW cor. NW SW Sec. 20-26-1e ..... Shut down 1,100 ft.
Morgan et al's No. 1 Corn, SW cor. NE Sec. 28-25-1w.... Drlg. 3,825 ft.
Washabaugh et al's No. 1 Harrison, NW cor. NE NE Sec. 3-26-2w ..... Drlg. 1,160 ft.
Sullivan et al's No. 1 Shelly, NW cor. NE SE Sec. 32-29-2e ..... Shut down 2,990 ft.
Hartman & Skaer et al's No. 1 Hutchinson, SE cor. SE SW Sec. 23-28-3w ..... Drlg. 4,157 ft.
Producers Oil Co.'s No. 1 Jones, SW cor. NE SE Sec. 31-26-2 ..... Hole full water 3,357-75 ft.; shut down 3,409 ft.; total depth 3,505 ft.
LaFont et al's No. 1 Carlton, C SE SE SW Sec. 24-28-1e.. Drlg. 1,385 ft.
Frank Wahn's No. 1 Wilson, C NE NW SE Sec. 9-26-1w.. Abandoned.
Connell & Slick's No. 1 Mohannah, C NE SE SE Sec. 3-25-1w ..... Drlg. 3,508 ft.

SHERMAN COUNTY

A. L. Henson et al's No. 1 Murry, NE cor. SE NW Sec. 22-7-40w ..... Shut down 3,035 ft.

STEVENS COUNTY

Trees Oil Co.'s No. 1 Thompson, C NE SW Sec. 3-35-38w.. Shut down 500 ft.
W. Sidwell et al's No. 1 Kelly, SW cor. NE Sec. 16 34-38w ..... Shut down 1,320 ft.

SMITH COUNTY

Phillips Pet.'s No. 1 Clydesdale, SE NW Sec. 23-5-14w... Drlg. 400 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Unknown, NE cor. NE Sec. 4-2-13w ..... Water 3,759-63 ft.; abandoned 4,099 ft.

SUMNER COUNTY

Morgan & Carey's No. 1 Hawkins, SW SE Sec. 9-34-1e... Drlg. 560 ft.
Gypsy & Blankenship's No. 1 Robeck, C SW SW Sec. 27-34-4w ..... Drlg. 4,190 ft.
Davidson et al's No. 1 Strickland, SW cor. SE Sec. 12-35-1w ..... Rig.

TREGO COUNTY

Day et al's No. 1 Gugler, SW NE NE Sec. 36-12-21w.... Shut down 50 ft.
Day et al's No. 1 Unknown, NE NW SW Sec. 2-11-21w.. Shut down 900 ft.
Central Commercial Oil Co.'s No. 1 Ellis, NE cor. SW NE Sec. 20-13-21w ..... Hole full oil 3,960-72 ft.; averaging 189 bbls. daily.

WASHINGTON COUNTY

McCool & Vincent's No. 1 Linn, NW cor. NE Sec. 27-4-3.. Drlg. 2,300 ft.

WALLACE COUNTY

Morton & Entyre's No. 1 Parker, SE cor. NW SW Sec. 20-13-41w ..... Rig.

WILDCAT OPERATIONS IN NEBRASKA

(Descriptions are East unless otherwise marked)

FRANKLIN COUNTY

U. R. Drlg. Co.'s No. 1 Brunkle (twin well), C NW SW NE Sec. 2-3n-13w ..... Rig.
Northwestern's No. 1 Ingold, C NE Sec. 24-6n-38w ..... Total depth 4,050 ft.; cementing cave.

FURNAS COUNTY

Southwestern Pet. Corp. of Nebraska's No. 1 Montague, SE SW SW Sec. 28-1n-22w ..... Shut down 1,510 ft.
Graham Bros.' No. 1 Edwards, NW SW Sec. 13-2n-22w... Shut down 3,150 ft.

WEBSTER COUNTY

Mid-States Exploration Co.'s No. 1 Platt, C SE one-half Sec. 3-1n-11w ..... Drlg. 555 ft.

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

(Continued from Page 51)

HASKELL COUNTY

Holden's No. 1 Phillip, SE cor. Sec. 5-9-18e ..... Drlg. 1,700 ft.
Marion Oil's No. 1 Sanders, NW NE SW Sec. 10-9-18e.. Shut down 2,387 ft.
Sanboise Gas' No. 1 Unknown, SW NW SE Sec. 32-9-21e.. Shut down 2,100 ft.

HUGHES COUNTY

Whitney et al's No. 1 Moore, SE SW Sec. 17-5-9 ..... Underreaming 6-in. csg. 3,910 ft.
McGee Co.'s No. 1 fee, SE cor. Sec. 25-8-11e ..... Drlg. 3,230 ft.
The Texas Company's No. 1 Bryan, SE NE SW Sec. 9-6-8e ..... Rigging up standard tools 3,396 ft.

JACKSON COUNTY

Altus Oil Co.'s No. 1 Northington, NE cor. NE Sec. 4-1-20w ..... Shut down 2,020 ft.

KINGFISHER COUNTY

Galt Brown's No. 1 Wolf, NW SE Sec. 6-16-7w ..... Fishing 5,195 ft.
McKenna & Crawford's No. 1 Sturgeon, NE cor. SW Sec. 27-16-6w ..... Shut down 4,895 ft.

KIOWA COUNTY

Hyde et al's No. 1 Jones, SE cor. Sec. 23-3-18w-50 ..... Shut down 50 ft.
S. H. Christian's No. 1 Stone, SE cor. Sec. 18-7-18w .... Rig on ground.
Merrick Oil Co.'s No. 1 Kelly, NW cor. SE Sec. 20-7-17w.. Shut down 1,035 ft.
McWharter and others' No. 1 Sherwood, CWL NW NE Sec. 2-5-17w ..... Shut down 630 ft.

LATTIMER COUNTY

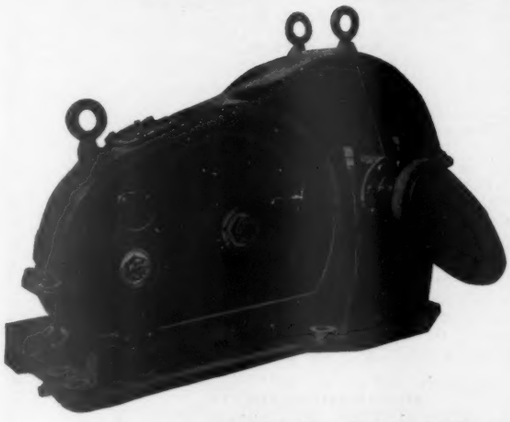
Limestone O. & G. Co.'s No. 1 Shaw, NW cor. NE NW Sec. 23-5-18e ..... Rig on ground.
Limestone Oil & Gas Co.'s No. 1 McMurray, SW cor. SW Sec. 15-5-18 ..... Fishing 3,954 ft.

LINCOLN COUNTY

Phillips Pet. Co.'s No. 1 Stephens, SE cor. NW Sec. 29-12-3 ..... Rig.

50 Units in One

The exclusive "change gear" feature of Westinghouse-Nuttall double-reduction oil well gear units provides a distinctively simplified arrangement for obtaining the variety of operating speeds required for the various conditions encountered in different wells or for changes in the condition of the same well.



A Westinghouse-Nuttall double reduction oil well unit with side plate removed showing the extreme accessibility for changing the gear ratio.

In each of the double-reduction units—OP-11, 13, 14, 15 or 16—more than fifty different reduction ratios can be used, and the prime mover will operate at its most efficient speed with each of them. A gear and pinion for a different ratio—the only additional items required—can be obtained on short notice and the complete change made in less than two hours without even disconnecting the well or prime mover from the unit.

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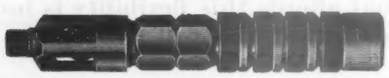

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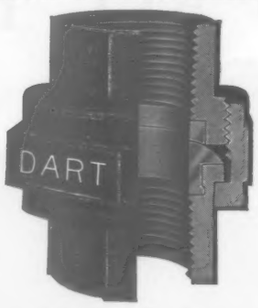

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5. Cuts Down Shut-downs
6. Makes Boilers Last Longer
7. Simple and Compact
8. Reduces Labor Costs
9. Practically Indestructible
10. Adjustable to Fit the Tubes

Morgan & Flynn's No. 1 Finlay, SW cor. SW Sec. 19-16-6 ..... Drlg. 2,840 ft.

LOGAN COUNTY

Haley & Smith's No. 1 Guier, SE cor. SW Sec. 33-18-3w.. Cleaning out 5-in. csg. 3,970 ft.

McINTOSH COUNTY

Spring Valley Oil Co.'s No. 1 Carr, SE cor. NE NW Sec. 16-10-13e ..... Shut down 250 ft.
Patterson and others' No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Shot 240 qts. 5,446-5,559 ft.; shot went off up hole; shut down.
Wolfe and others' No. 1 Unknown, NW cor. SE Sec. 15-12-18 ..... Rig on ground.

MAJOR COUNTY

Earl and others' No. 1 Turner, C NE NE Sec. 23-20-14w.. Rig.
Wilson and others' No. 1 Unknown, NE cor. NE Sec. 4-23-16w ..... Shut down 510 ft.

MUSKOGEE COUNTY

Bradley's No. 1 Anderson, NW NW SW Sec. 26-15-19e .. Machine.
Cooper-Badget's No. 1 Young, NW NE NE Sec. 7-12-20e.. Shut down 50 ft.
Tulkogee Oil Co.'s No. 1 Thompson, NW NE Sec. 31-15-20e ..... Machine.
Slusher's No. 1 Barnes, NE cor. Sec. 22-13-19e ..... Machine.
J. L. Slusher's No. 1 Nave, NE cor. SW NW Sec. 20-15-20 ..... Shut down 775 ft.

NOBLE COUNTY

Gypsy Oil Co.'s No. 1 Bailey, C NE NE Sec. 24-22-1e .... Drlg. 650 ft.
Magnolia Petroleum's No. 1 King, C SE SW Sec. 26-20-1w. Rig.

OKFUSKEE COUNTY

Superior and others' No. 1 Carolina, SE cor. Sec. 6-11-7e ..... Location.

OKLAHOMA COUNTY

Mid-Kansas' No. 1 Trosper, NE NW Sec. 19-12-1w ..... Drlg. 5,030 ft.
Hall & Briscoe's No. 1 Holmes, NE cor. SW SE Sec. 10-11-3w ..... Shut down 4,750 ft.

PITTSBURG COUNTY

Empire O. & R. Co.'s No. 1 Unknown, C NE SE Sec. 33-7-16e ..... Location.
Kerr & Koy's No. 1 Hall, C NW NW Sec. 32-4-13 ..... Drlg. 1,895 ft.

POTTAWATOMIE COUNTY

Frank Moore's No. 1 Fundis, SE NE Sec. 19-7-2 ..... Location.
Phillips Pet. Co.'s No. 1 King, NW cor. Sec. 26-8-4 ..... Rig on ground.
Sinclair and Mid-Continent's No. 1 Cumings, SE NE SE Sec. 6-7-5 ..... Drlg. 313 ft.
Shaffer and Margay's No. 1 Murphy NW NE Sec. 11-6-3 ..... Rig.
Cal-Cul Oil Co.'s No. 1 McKnight, NW cor. NE NW Sec. 9-8-3 ..... Rig.

ROGER MILLS COUNTY

Bucy & Stone's No. 1 William, C SW Sec. 23-12-24w ..... Location.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w .... Drlg. 1,080 ft.

SEMINOLE COUNTY

Indian Territory Illuminating Oil Co.'s No. 1 Factor, SW NE SE Sec. 3-5-7e ..... Rigging up standard tools 4,284 ft.
Continental Oil Co.'s No. 1 Proctor, SE cor. NE NE Sec. 5-8-8e ..... Underreaming 6-in. csg. 3,635 ft.
McCulloch Oil Co.'s No. 1 Powell, NW cor. NW Sec. 11-6-5 ..... Rigging up standard tools 4,335 ft.
Magnolia Pet. Co.'s No. 1 Harjo, NE cor. SE Sec. 34-6-7.. Water 4,717-22 ft.; abandoned.

SEQUOYAH COUNTY

Hunt and others' No. 1 Unknown, SE cor. NW SW Sec. 12-12-23 ..... Shut down 1,105 ft.
Buffington and others' No. 1 Melcher, C SW NW Sec. 31-12-24 ..... Shut down 3,000 ft.

WOODS COUNTY

Peerless O. & G. et al's No. 1 Cromwell, SW SE Sec. 14-28-16w ..... Rig on ground.
E. K. Miller's No. 1 Copenhavers, NW cor. NW Sec. 18-24-13w ..... Rigged up and shut down.
Gypsy-Prairie and others' No. 1 Thompson, SE cor. SW Sec. 10-25-15w ..... Drlg. 5,510 ft.
Sinclair Oil & Gas Co.'s No. 1 Steward, C SW SW Sec. 33-27-16w ..... Drlg. 3,590 ft.

WOODWARD COUNTY

Farrond et al's No. 1 Unknown, SE cor. SW SE Sec. 2-23-17w ..... Shut down 1,387 ft.
Prairie Oil & Gas Co. and others' No. 1 James, NE cor. NW Sec. 23-23-17w ..... Rigging up standard tools 4,298 ft.
Billy's Oil Co.'s No. 1 Watt, C SE Sec. 9-23-20w ..... Shut down 3,813 ft.
Burgoyne Brothers' No. 1 Merkins, SW cor. SE NE Sec. 15-21-19w ..... Shut down 1,910 ft.
Wilson and others' No. 1 Unknown, NE cor. SW Sec. 4-23-16w ..... Shut down 510 ft.

SOUTHERN OKLAHOMA

ATOKA COUNTY

Wapanucka Oil Co.'s No. 1 Banks, CWL SE SE Sec. 28-2s-9 ..... Shut down 1,530 ft.

BRYAN COUNTY

Wheeler & Wiley's No. 1 Pitts, NW. cor. Sec. 36-6s-9e.. Underreaming 723 ft.
Yale Oil Syndicate's No. 1 Craige, C NW NE Sec. 36-9s-9e ..... Shut down 1,500 ft.

CARTER COUNTY

L. J. Woodruff's No. 1 Zellnear, NE cor. NW SE Sec. 34-4s-1 ..... Drlg. 950 ft.
Avon-Dickey's No. 1 Anderson, NE cor. SE NE SE Sec. 32-4s-2 ..... Shut down 420 ft.

CHOCTAW COUNTY

Choctaw Petroleum Co.'s No. 1 Wilson, SW cor. SW Sec. 15-6-9 ..... Shut down 1,346 ft.

COTTON COUNTY

Hedrick et al's No. 1 Bull, SW SE Sec. 3-15-10w ..... Drlg. 2,146 ft.
Birdwell et al's No. 1 Means, SE SW SW Sec. 24-1-11w.. Drlg. 1,650 ft.
Pewlin Pet. Co.'s No. 1 King, SW SE Sec. 22-3-9w ..... Abandoned 3,180 ft.
Amerada Pet. Corp.'s No. 1 Dulaney, SE cor. NW NW Sec. 31-4-9w ..... Drlg. 2,730 ft.

JEFFERSON COUNTY

Gypsy and Roy Johnson's No. 1 Unknown, NW SE SE Sec. 2-7s-7w ..... Drlg. 1,560 ft.
Danciger et al's No. 1 Dilley, SE NW (O.D.D.) Sec. 11-5-7w ..... Rig.
Wirt Franklin Pet.'s No. 1 Sanders, SE NW Sec. 10-4-8w. Drlg. 2,985 ft.
Alter and others' No. 1 Johnson, SW cor. NW Sec. 14-4-7. Spudded and shut down 350 ft.

JOHNSTON COUNTY

Smith & Knisely's No. 1 Lane, E half Sec. 29-1-7 ..... Shut down 2,090 ft.
Bush Creek Oil Co.'s No. 1 Kirby, SE cor. NE NW Sec. 9-4-7 ..... Shut down for casing 405 ft.

MURRAY COUNTY

Bison Oil Co.'s No. 1 Labor, NW cor. Sec. 17-1-2e ..... 500,000 ft. gas and show of oil 2,185-2,228 ft.; shut down 2,270 ft.

STEPHENS COUNTY

Leath et al's No. 1 Handley, SE SW Sec. 24-2-9w ..... Drlg. 1,640 ft.
Wirt Franklin Pet.'s No. 1 Spain, SW SE NW Sec. 9-2-5w ..... Drlg. 2,971 ft.
G. W. Haines et al's No. 1 Woolsey, SE cor. SW NE Sec. 4-35-6w ..... Location.
Ellis Drilling Co.'s No. 1 Yates, SW NE Sec. 4-3-7w .... Abandoned 2,425 ft.
Smythe and others' No. 1 Shaw, NE cor. NE Sec. 27-2-8w ..... Shut down 2,602 ft.

TILLMAN COUNTY

Cochran & Ridgway's No. 1 Barnes, C NW NE ..... Cellar.
Burt Lambert and others' No. 1 Zivlig, C NW Sec. 26-1-18w ..... Drlg. 3,500 ft.
Landfair and others' No. 1 Smith, SE SW SE Sec. 6-2s-15w ..... Shut down 2,535 ft.
Allen & Treadwell's No. 1 Howell, NW cor. SE Sec. 13-1-17w ..... Shut down 820 ft.

OKLAHOMA PANHANDLE

Magnolia Pet. Co.'s No. 1 School, C SE NE Sec. 22-5-5.... Drlg. 4,105-25 ft.; water.
Skaer's No. 1 Hitch, NW cor. Sec. 25-1-15e ..... Drlg. 250 ft.

CALIFORNIA OIL FIELD OPERATION FOR MAY, 1929

According to figures collected by the American Petroleum Institute, Pacific Coast office, the total production of crude oil in California for May amounted to 24,053,351 bbls., an average of 775,915 bbls. per day. This is a decrease of 587 bbls. per day under April production.

Total stocks of crude and all products in Pacific Coast territory increased during the month 4,413,518 bbls. The total stocks at the end of the month were 159,794,809 bbls. The total stock increase for 1929, up to May 31, was 19,793,915 bbls.

Sixty-seven wells were completed during the month with an initial daily production of 84,259 bbls., compared with 77 wells completed during April with an initial production of 103,048 bbls.

PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons)

District—	Barrels per month	Daily average May, 1929	Daily average April, 1929	Daily average May, 1928
Kern River	432,389	13,948	16,058	6,876
Mount Poso	103,122	3,326	51	47
Fruitvale	30,374	980	235	.....
Round Mountain	3,093	100	38	121
McKittrick	131,496	4,242	4,875	5,065
Midway-Sunset	2,037,926	65,740	70,224	70,593
Elk Hills	536,362	17,302	18,518	23,344
Lost Hills-Belridge	136,024	4,388	4,434	4,066
Coalinga	288,975	9,322	9,919	10,492
Kettleman Hills	104,572	3,373	3,808	.....
Wheeler Ridge	20,476	660	734	977
Watsonville	1,937	62	61	58
Santa Maria	133,375	4,302	4,824	5,753
Summerland	3,378	121	121	123
Elwood-Goleta	876,728	28,282	28,591	97
Santa Barbara	1,510	49	.....	.....
Rincon	110,496	3,564	3,248	2,904
Ventura Avenue	1,881,463	60,692	55,356	48,207
Ventura-Newhall	149,320	4,817	5,174	5,770
Los Angeles-Salt Lake	48,058	1,550	1,500	1,495
Whittier	44,788	1,445	1,525	1,687
Fullerton (Brea Olinda)	388,966	12,547	13,187	16,340
Coyote	347,353	11,205	11,454	13,595
Santa Fe Springs	5,629,580	181,600	158,331	36,924
Montebello	316,658	10,215	10,859	12,130
Richfield	489,294	15,784	15,967	18,947
Huntington Beach	1,343,277	43,331	44,748	54,101
Long Beach	5,430,851	175,189	190,102	181,264
Torrance	422,242	13,621	14,505	17,738
Dominguez	312,155	10,069	10,741	12,501
Rosecrans	180,041	5,808	6,404	6,256
Inglewood	734,116	23,681	24,744	29,401
Newport	1,145	37	40	11
Seal Beach	1,315,269	42,428	44,660	36,177
Potrero	17,006	549	692	550
Lawndale	49,176	1,586	774	.....
Total May	24,053,351	775,915	776,502	623,609
Total April	23,295,060	776,502	.....	.....
Increase	758,291	*587	.....	.....

*Decrease.

STOCKS

	May 31, 1929	April 30, 1929	May stock Increase	May 31, 1928
Heavy crude, heavier than 20° A.P.I., including all grades of fuel	102,921,746	101,900,145	1,021,601	94,889,736
Refinable crude, 20° A.P.I. and lighter	30,455,516	27,766,755	2,688,761	19,875,112
Gasoline	14,108,752	14,113,736	*4,984	14,195,792
Naphtha distillates	2,233,956	1,933,402	300,554	1,745,312
All other stocks	10,074,839	9,667,253	407,586	9,359,507
Total all stocks	159,794,809	155,381,291	4,413,518	140,065,459

*Decrease.

DEVELOPMENTS

	New rigs up	Active drilling	Completed	Daily initial output	Active producing	Abd. Wells— Drillers	Abd. Wells— Producers
Kern River	4	5	2	405	1,052	1	0
Mount Poso	5	5	4	725	15	0	0
Fruitvale	0	4	0	0	2	0	0
Round Mountain	0	3	2	500	2	0	0
McKittrick	1	0	0	0	268	0	0
Midway-Sunset	8	28	8	2,178	2,140	0	3
Elk Hills	6	1	0	0	202	0	1
Lost Hills-Belridge	1	3	2	85	332	0	0
Coalinga	0	0	0	0	754	0	1
Kettleman Hills	4	26	0	0	1	0	0
Wheeler Ridge	0	0	0	0	32	0	0
Watsonville	0	0	0	0	6	0	0
Santa Maria	1	5	0	0	224	0	0
Summerland	0	2	0	0	89	0	0
Elwood-Goleta	0	4	0	0	11	0	0
Santa Barbara	10	0	1	1,000	1	0	0
Rincon	0	3	2	730	29	4	0
Ventura Avenue	3	39	6	9,820	166	0	0
Ventura-Newhall	2	25	0	0	498	1	0
Los Angeles-Salt Lake	0	0	0	0	314	0	0
Whittier	0	0	0	0	160	0	0
Fullerton	0	3	1	100	371	0	0
Coyote	0	3	0	0	205	0	0
Santa Fe Springs	10	170	15	51,468	400	0	0
Montebello	0	3	0	0	170	0	0
Richfield	4	9	3	636	273	0	1
Huntington Beach	1	7	1	262	559	0	1
Long Beach	17	87	13	11,072	938	2	2
Torrance	0	0	0	0	595	0	0
Dominguez	0	1	0	0	65	0	0
Rosecrans	0	4	0	0	95	0	3
Inglewood	0	0	0	0	220	0	0
Newport	0	1	0	0	2	0	0
Seal Beach	1	4	2	3,706	144	0	1
Potrero	1	7	2	125	5	0	0
Lawndale	1	15	3	1,447	6	0	0
Miscellaneous drilling	6	138	0	0	0	5	0
May	80	605	67	84,259	10,347	13	13
April	142	612	77	103,048	10,604	31	45
Decrease	62	7	10	18,789	257	18	32
Average for year 1928	107	520	59	56,802	10,823	15	25
Average for year 1927	97	404	75	39,992	11,276	23	21
Average for year 1926	95	422	76	32,635	11,288	24	17
Average for year 1925	105	417	79	42,247	11,393	28	12
Average for year 1924	103	510	103	42,412	10,903	28	21

BUYS SMACKOVER PRODUCTION

SHREVEPORT, La., June 29.—Root Refineries, Inc., of Shreveport has bought the Amerada Petroleum Corp.'s Smackover production amounting to 600 bbls. from 22 wells on five leases aggregating 200 acres in the Arkansas Pool, paying a reported $250,000. Amerada retains its Haynesville production amounting to approximately 160 bbls. per day from three leases.

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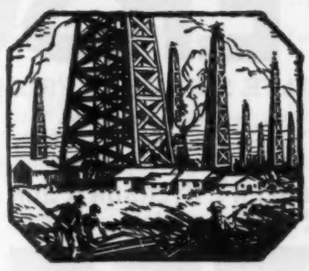

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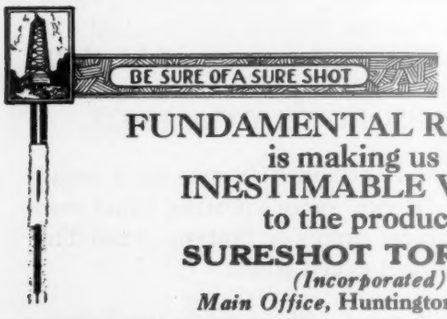

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The OIL and GAS JOURNAL
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EASTERN FIELDS

(Continued from Page 79)

Deem & Co. have a gasser in the Big Injun sand on the S. A. Tingler farm.

Drilling Tests

In Jefferson district, Lincoln County, the Cecelia Oil & Gas Co. is drilling on the Croft Land Co.'s property. In Washington district, Boone County, the Hope Natural Gas Co. is drilling No. 7,243 on the J. D. Allen farm and has a rig up for a second test. In the same district the Cameron O. & G. Co. has rig material at a location on the J. P. Estep farm.

In Center district, Calhoun County, L. P. Bickel completed in the Big Injun sand a test on the S. F. Fleming farm. It is a gas well good for 500,000 feet. In the same district, W. H. Bickel completed in the same formation a test on the Frank Johnson farm. It is a gasser good for 1,250,000 feet.

In some sections of West Virginia there is evidence to show that operators are starting new work outside and in advance of the old fields. Most of them are not located far enough in advance of production to be regarded as wildcats. In Clay district, Ritchie County, A. S. McCullogh and others are drilling on the C. B. Nutter farm, one-half mile in advance of production. On the Kanawha River, Glenville district, Gilmer County, the Pittsburgh & West Virginia Gas Co. has a rig completed on the C. G. Hays farm, 3,000 feet in advance of production. On Stewarts Creek, same district and county, the Pittsburgh & West Virginia Gas Co. has a rig up on the John W. Wolfe farm. In Mannington district, Marion County, Monroe & Laughlin have a rig up on the Margaret Stiles farm.

In DeKalb district, Gilmer County, the Philadelphia Natural Gas Co. has made a location on the Samuel E. West farm. In Sherman district, Calhoun County, Godfrey L. Cabot has started to drill on the C. W. Harris farm and made a location on the Charity Poling farm. In Cameron district, Marshall County, the Manufacturers Light & Heat Co. is due in the sand on the R. S. Winters farm. In Liberty district, the same company is placing rig material at a location on the Marshall County Bank's property.

On Farney Run of Big Paw Paw Creek, Pawpaw district, Marion County, the Owens Bottle & Machine Co. is starting a second test on the Martha E. Robinson farm, 5,000 feet southwest of the test on the Elizabeth Clayton farm. In Clay district, Wirt County, on Flint Creek, W. C. Patterson has made a location on the Vernon-Donoho farm. In DeKalb district, Gilmer County, the South Penn Oil Co. has completed a rig on the R. J. Ellis farm. In Union district, Ritchie County, the Pittsburgh & West Virginia Gas Co. is rigging up on the W. H. Hall farm. In DeKalb district, Gilmer County, Frank Golden has completed a rig on the G. W. Miller farm. In the same district, the Hope Natural Gas Co. is building a rig on the O. W. Hardman farm. The Philadelphia Co. has made a location on the Samuel E. West farm.

SOUTHWEST PENNSYLVANIA

In the old Duff City Field, Franklin Township, Allegheny County, Pennsylvania, Harbison & Co. have completed a test on the Wightman farm, good for 3 bbls. a day in the Boulder formation. In Ohio Township, F. P. Martin's test on the Joseph Snyder farm is a gasser. In Marshall Township, Carey & Co. have a gasser on the Joseph Schwenderman farm.

In Cecil Township, Washington County, Percy Bishop has completed a test on the N. R. Tannehill farm. It is a 10-bbl. pumper in the Fifth sand. In East Finley Township, the Natural Gas Co. of West Virginia completed a 10-bbl. pumper on the R. A. Marshall farm. In the same township, the Carnegie Natural Gas Co. has a rig up on the Jacob Stewart farm.

Near Prosperity, Washington County, the West Virginia Natural Gas Co. has completed a 5,000,000-foot gasser.

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS PIPE-LINE STATEMENT FOR APRIL

Runs

	Month	Dy. av.
Prairie Pipe Line Co.*	4,530,000	151,000
Gulf Pipe Line Co.	1,564,949	52,165
Texas Pipe Line Co.	922,992	30,766
Empire Pipe Line Co.	1,161,291	38,710
Magnolia Pipe Line Co.	2,095,764	69,859
Cosden Pipe Line Co.	908,794	30,293
Sinclair Pipe Line Co.	3,240,000	108,000
Oklahoma Pipe Line Co.	3,194,549	106,485
Other lines	5,730,000	191,000
Total April	23,348,339	778,278
Total March	23,784,055	767,228
Difference	435,716	11,050

Shipments

Prairie Pipe Line Co.†	5,952,638	198,421
Gulf Pipe Line Co.	1,647,191	54,906
Texas Pipe Line Co.	1,146,592	38,220
Empire Pipe Line Co.	1,180,558	39,362
Magnolia Pipe Line Co.	2,216,023	73,867
Cosden Pipe Line Co.	825,750	27,525
Sinclair Pipe Line Co.†	3,095,208	103,174
Oklahoma Pipe Line Co.	3,131,951	104,398
Other lines	6,000,000	200,000
Total April	25,195,911	839,863
Total March	25,855,029	834,035
Difference	659,118	5,828

Stocks

Prairie Oil & Gas Co.*	37,322,000
Gulf Pipe Line and Gypsy Oil Co.	9,579,763
The Texas Company	8,040,740
Empire Pipe Line Co.	4,128,767
Cosden Pipe Line Co.	3,519,000
Sinclair Crude Oil Pur. Co.*	20,600,000
Magnolia Petroleum Co.	9,855,607
Oklahoma Pipe Line Co.	3,133,733
Carter Oil Co.	11,488,724
Other lines*	11,750,000
Total April	119,418,334
Total March	121,191,264
Difference	1,772,930

*Estimated. †Prairie shipments include Texas crude oil and Sinclair shipments include Texas and Wyoming crude oil.

Note: Stocks do not include approximately 5,350,000 bbls. of crude oil held in storage on private tank farms and leases.

EASTERN PIPE LINE REPORT

Runs from Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for April and May:

	Apr., '29	May, '29
Nat. Transit	220,177.96	253,769.83
S. W. Pa. P. L.	96,471.45	100,936.95
Eureka P. L.	361,294.32	380,915.89
Buckeye P. L. (Macksburg)	335,779.62	343,829.07
Buckeye P. L. (Cleve.)	12,265.09	12,404.92
Buckeye P. L. (Lima, etc.)	103,296.03	111,166.94
Indiana P. L.	5,130.73	5,648.56
Cumberland P. L.	203,144.51	199,988.52
N. Y. Transit	31,202.58	31,526.85
Tidewater P. L.	233,576.47	260,931.30
Pure Oil	60,020.89	62,790.66
Emery P. L.	65,713.91	69,891.53
Paragon Dev.	18,255.49	17,045.54
Stoll Oil Ref.	6,979.37	6,113.39
Total	1,753,308.42	1,856,959.95
Daily average	58,443.61	59,901.93

Note—Indian Refining Co. also reported other receipts of 308,586.09 bbls. Paragon Refining Co. had other receipts of 136,357.33 bbls. Paragon Development had other receipts of 391.62 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky for April and May.

	Apr., '29	May, '29
Nat. Transit	459,812.50	571,534.68
S. W. Pa. P. L.	363,716.29	384,900.26
Eureka P. L.	248,843.98	242,388.07
Buckeye P. L. (Macksburg)	191,498.74	219,775.55
Buckeye P. L. (Cleve.)	1,941.40	2,185.24
Buckeye P. L. (Lima, etc.)	1,323,167.62	1,597,379.34
Indiana P. L.	1,380,184.34	1,456,199.10
Cumberland P. L.	184,506.68	212,951.47
Southern P. L.	71,454.97	.....
N. Y. Transit	186,779.49	282,843.83
Northern P. L.	179,598.23	190,228.92
Tidewater P. L.	179,487.31	210,039.70
Pure Oil	57,602.63	61,580.15
Emery P. L.	63,977.39	74,596.34
Paragon Ref.	185,079.68	186,897.16
Paragon Dev.	14,456.13	19,208.47
Total	5,092,107.38	5,712,708.28
Daily average	169,736.91	184,280.91

Indian Refining Co. reported other deliveries of 222,665.75 bbls.

Gross Stocks

The gross stocks held by various pipe lines in the oil-producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of April and May:

	Apr., '29	May, '29
Nat. Transit	716,361.68	800,104.62
S. W. Pa. P. L.	423,480.13	466,368.92
Eureka P. L.	1,305,585.15	1,224,524.89
Buckeye P. L. (Macksburg)	517,342.15	463,437.44
Buckeye P. L. (Cleve.)	36,739.70	54,068.74
Buckeye P. L. (Lima, etc.)	1,977,286.44	1,917,019.67
Indiana P. L.	541,456.22	507,698.71
Cumberland P. L.	589,250.22	581,865.71
Southern P. L.	472,810.29	488,042.66
N. Y. Transit	319,023.52	233,636.63
Northern P. L.	384,395.22	408,913.03
Tidewater P. L.	1,317,878.72	1,291,934.65
Pure Oil	11,307.22	13,042.02
Emery P. L.	14,291.05	9,439.08
Paragon Ref.	18,502.92	17,668.51
Indian Ref.	68,506.50	152,604.26
Paragon Dev.	8,966.70	7,540.83
Tuscarora	255,038.02	265,649.33
Total	8,978,171.85	8,903,559.70
Decrease	23,385.66	74,612.15

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern Pipe Lines at the close of April and May showing the gross stocks of the above fields:

	Apr., 1929	May, 1929
Pennsylvania	3,399,836.77	3,350,662.61
Lima	557,347.94	587,235.33
Kentucky	781,911.36	787,127.03
Mid-Continent	3,956,708.61	3,788,393.60
Illinois	282,367.17	390,141.13
Total	8,978,171.85	8,903,559.70

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1926	1927	1928	1929
January	55,630	56,209	52,904	51,749
February	60,394	61,298	57,002	51,833
March	61,644	63,247	57,485	54,252
April	63,019	60,927	56,812	58,444
May	60,580	60,284	62,067	59,902
July	63,206	58,674	57,144	.....
August	61,815	60,870	57,745	.....
September	64,639	60,286	53,487	.....
October	161,132	147,080	58,100	.....
November	67,774	57,275	53,565	.....
December	58,755	53,089	52,025	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1926	1927	1928	1929
Jan.	156,056	141,227	146,465	165,721
Feb.	159,483	138,534	167,368	159,387
Mar.	150,239	133,777	158,883	161,474
April	152,374	140,227	172,935	169,737
May	160,993	144,594	180,559	184,281
July	160,045	151,850	189,470	.....
Aug.	151,929	158,653	192,853	.....
Sept.	158,915	144,213	194,138	.....
Oct.	161,132	147,036	176,000	.....
Nov.	172,603	150,975	176,898	.....
Dec.	136,428	144,504	173,572	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1927	1928	1929
Jan.	9,718,008	12,276,710	7,596,564
Feb.	10,119,162	12,180,419	8,738,835
Mar.	10,794,044	12,239,725	9,002,058
April	11,112,295	11,740,125	8,978,172
May	11,359,381	11,602,468	8,903,560
June	11,493,673	11,287,678	.....
July	11,458,128	10,819,331	.....
Aug.	11,989,115	10,236,743	.....
Sept.	12,212,716	9,660,910	.....
Oct.	12,047,661	9,229,709	.....
Nov.	11,939,740	8,366,553	.....
Dec.	12,340,297	7,539,555	.....

Franklin Pipe Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the month named and not counted in the stocks and averages reported above:

1928—	Runs	Shipments	Stocks
June	3,153.08	2,779.02	17,922.58
July	2,902.50	*3,628.02	17,197.06
Aug.	2,874.11	3,350.13	17,721.04
Sept.	2,820.31	5,255.42	15,285.93
Oct.	1,289.93	538.89	17,551.93
Nov.	2,663.53	788.47	19,426.99
Dec.	3,053.60	3,167.53	19,426.99
1929—			
Jan.	2,099.90	.....	19,313.06
Feb.	2,469.47	6,873.20	17,009.23
March	3,330.82	3,595.01	16,745.04
April	4,864.07	4,243.59	17,365.52
May	2,688.59	2,455.54	17,598.57

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, June 1	2,412,509.36
Runs from wells	581,291.12
Other receipts	468,875.35
Regular deliveries	617,578.55
Other deliveries	448,846.85

The amount of Illinois oil run by the Tidewater Pipe Co. in May was 27,690.56 bbls. Deliveries were 56,234.28 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1928—	Runs	Deliveries
June	608,552.49	625,087.33
July	612,286.49	565,678.37
August	639,074.85	671,864.02
September	570,307.91	737,293.50
October	626,147.64	626,290.40
November	576,332.88	702,589.93
December	584,633.00	491,517.26
1929—		
January	570,727.38	545,084.66
February	517,330.17	503,387.70
March	728,319.67	586,049.60
April	515,374.27	654,297.96
May	608,981.60	673,812.83

Tidewater Pipe Co., Ltd., also delivered in May, 151,979.23 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

Average bbls. per day—	Atlantic Ports: Baltimore	Boston	New York	Philadelphia	Others	Total	Gulf Coast Ports: Galveston	New Orleans Port Arthur Baton Rouge Sabine Pass	Tampa	Total	Total all ports
December	4,968	2,968	24,678	18,806	3,064	54,484	.....	.....	.....	2,419	56,903
January	15,838	.....	16,676	11,838	7,938	52,290	.....	.....	.....	5,161	57,451
February	14,214	.....	38,750	17,250	11,607	81,821	.....	.....	.....	3,750	85,571
March	19,903	968	31,258	18,581	7,355	78,065	.....	.....	.....	.....	78,065
April	16,667	.....	32,333	13,233	2,234	64,467	.....	.....	.....	7,333	65,200
May	16,226	2,416	31,326	10,806	2,129	62,903	.....	.....	.....	.....	62,903

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	Atlantic Ports: Baltimore	Boston	New York	Philadelphia	Others	Total	Gulf Coast Ports: Galveston	New Orleans Port Arthur Baton Rouge Sabine Pass	Tampa	Total	Total all ports
December	15,419	15,968	140,871	42,323	8,709	223,290	2,903	35,129	2,355	40,387	263,677
January	11,936	8,903	130,065	34,871	15,709	201,484	.....	34,808	4,093	1,387	40,193	241,677
February	13,750	15,071	135,179	32,750	17,893	214,643	.....	34,357	821	143	35,321	249,964
March	18,548	26,064	145,516	39,162	28,162	257,452	.....	42,581	2,322	.....	44,903	302,355
April	19,732	18,867	137,233	50,267	22,567	248,167	6,867	25,066	10,367	1,500	43,800	291,967
May	29,806	19,258	138,000	49,936	32,322	259,322	6,677	26,323	3,000	1,323	37,323	296,645

GROSS PRODUCTION IN UNITED STATES FOR 12 MONTHS

(In barrels of 42 gallons)

1928—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
May:	Month	19,331,866	19,443,355	21,220,046	3,367,809	2,843,847	1,926,026	2,525,043	3,619,000	74,276,992
	Daily average	623,609	627,205	684,518	108,639	91,737	62,130	81,447	116,742	2,396,033
June:	Month	19,164,244	18,482,981	19,877,936	3,202,050	3,075,911	2,074,422	2,425,470	3,401,000	71,704,014
	Daily average	638,808	616,099	662,598	106,735	102,530	69,147	80,849	113,367	2,390,134
July:	Month	19,754,453	18,809,188	22,055,737	3,171,543	2,792,139	2,238,090	2,492,536	3,487,000	74,800,746
	Daily average	637,241	606,748	711,475	102,308	90,069	72,131	80,408	112,484	2,412,927
August:	Month	19,444,899	20,340,304	22,339,131	3,147,058	2,711,787	1,989,264	2,561,840	3,556,000	76,590,783
	Daily average	627,255	672,284	720,448	101,518	87,477	64,170	82,640	114,709	2,470,670
September:	Month	18,908,169	22,456,860	21,554,269	3,047,250	2,540,070	1,830,225	2,432,430	3,329,000	75,998,273
	Daily average	630,272	748,562	718,207	101,575	84,669	61,007	81,047	104,300	2,533,279
October:	Month	19,436,993	23,431,071	22,176,853	3,058,460	2,652,484	1,836,221	2,571,822	3,612,000	78,769,903
	Daily average	626,806	755,841	715,376	98,660	85,564	59,233	82,962	116,516	2,540,964
November:	Month	19,907,536	22,078,680	20,791,798	2,977,800	2,476,080	1,801,914	2,388,870	3,348,000	75,770,668
	Daily average	663,584	735,956	693,059	99,260	82,536	60,064	79,629	111,600	2,505,689
December:	Month	21,574,708	22,425,722	22,180,102	2,988,400	2,521,571	1,846,841	2,289,040	3,581,000	79,407,379
	Daily average	695,958	723,410	715,487	96,400	81,341	59,576	73,840	115,516	2,561,528
1929—										
January:	Month	23,385,939	23,417,030	23,412,192	2,861,641	2,453,526	1,807,887	2,076,070	3,279,000	81,793,285
	Daily average	754,385	723,130	755,232	92,311	79,146	58,318	66,970	109,000	2,638,492
February:	Month	22,300,707	20,448,764	20,816,209	2,557,968	2,154,194	1,569,930	1,965,656	3,122,000	74,935,428
	Daily average	796,454	730,313	743,436	91,356	76,936	56,068	70,202	111,500	2,676,265
March:	Month	24,324,729	20,838,262	24,358,592	2,951,076	2,241,734	1,756,153	2,195,823	3,503,000	82,169,369
	Daily average	784,669	672,202	784,669	95,196	72,314	56,650	70,833	113,000	2,650,623
April:	Month	23,295,060	20,235,390	23,493,097	3,106,980	2,188,680	1,702,497	2,085,030	3,516,000	79,622,734
	Daily average	776,502	674,513	783,102	103,566	72,956	56,750	69,501	117,200	2,654,090
	Total 12 months	250,823,292	251,908,107	264,275,962	36,438,040	30,652,035	22,379,470	28,009,680	41,353,000	925,839,576

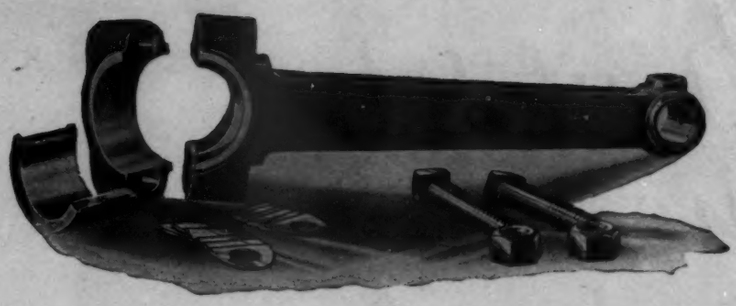
4 FEATURES OF GASO PUMP, FIG. 1508

1 Main and Pinion Shaft bearings are Timken Tapered Roller Bearings.

2 Main and Pinion Gears of continuous tooth Herringbone construction.

3 H-column Connecting Rod, with babbitt-lined, removable bronze shell at crank end.

4 Pump is fully enclosed, dust-proof, and entirely self lubricated.



An Enduring Connecting Rod . . . . . with Removable Bushing

Our Figure 1508 Pump has a connecting rod of best grade open hearth steel, of "H" construction for utmost strength, correctly balanced for smooth running.

The crosshead end is equipped with bronze bushing. The crank end has a removable, babbitt lined bronze shell, which is easily and quickly renewed in the field.

GASO PUMP & BURNER MFG. CO.
Tulsa, Okla.

210 Petroleum Bldg., Fort Worth, Texas

535 Fifth Ave., New York, N. Y.

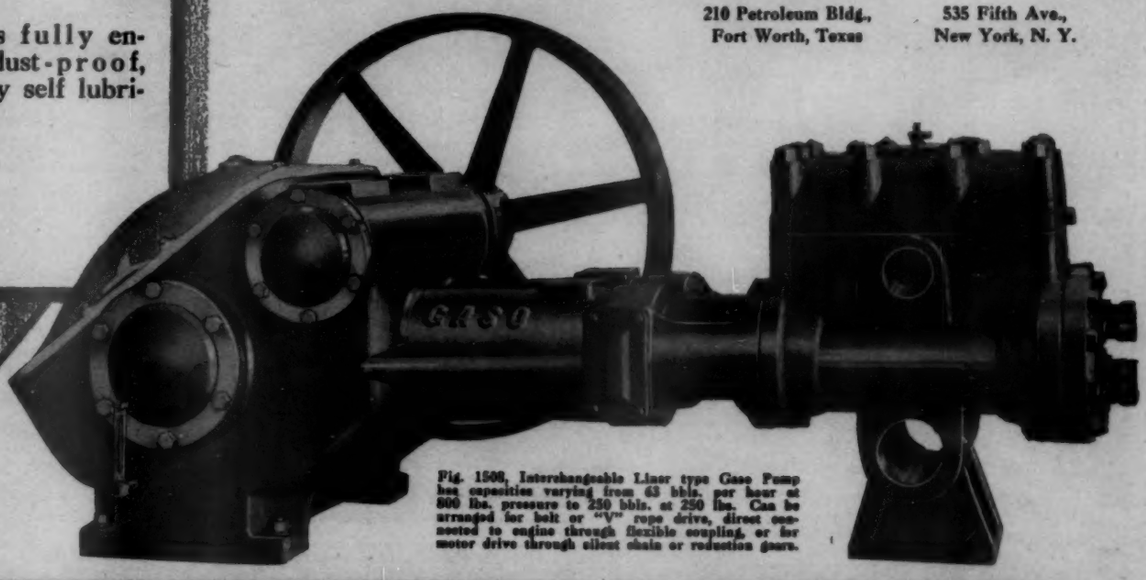
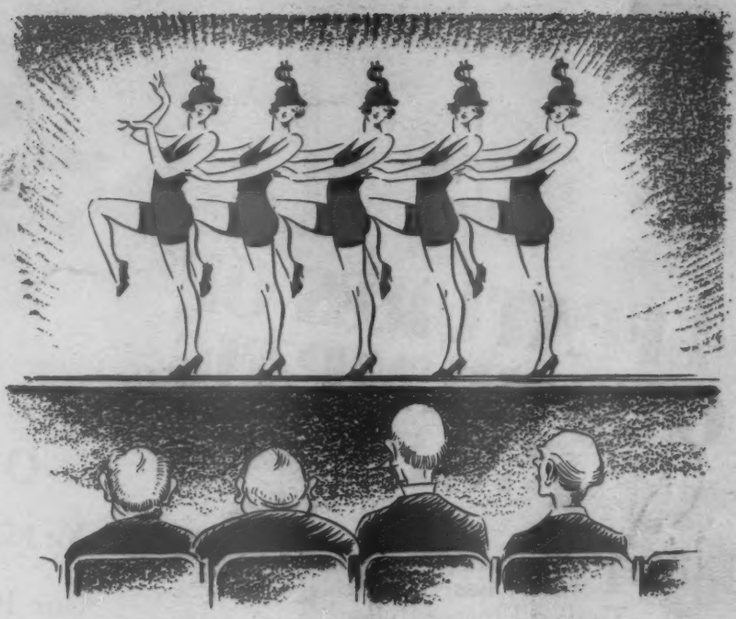


Fig. 1508, Interchangeable Liner type Gaso Pump has capacities varying from 63 bbls. per hour at 800 lbs. pressure to 250 bbls. at 250 lbs. Can be arranged for belt or "V" rope drive, direct connected to engine through flexible coupling, or for motor drive through silent chain or reduction gears.

GASO PUMPS

for every oil industry need

Don't let the Figures embarrass you!



THE cost figures for plants under your management won't embarrass you if you take advantage of the notable economies effected by CLARK *Double Acting* Engines. This machine costs less per h. p. for engine, foundation, freight, hauling, buildings, and piping for both power and compressor ends. Designed on the famous "Super 2" principle, it operates on 1/3 the fuel required for ordinary 2-cycle machines. Made in 200 H.P. Single and 400 H.P. Twin Types.

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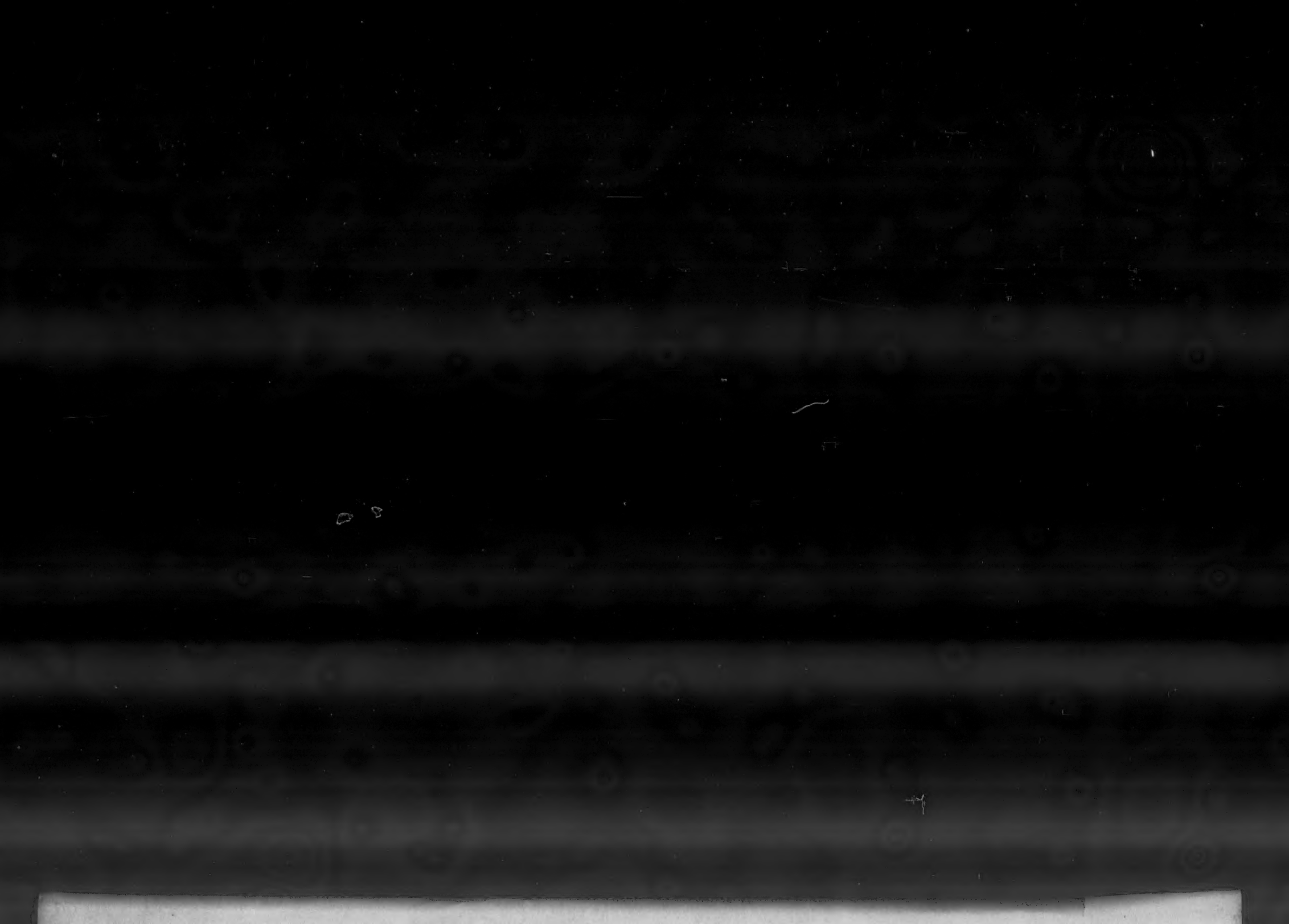
Compressors and Gas Engines

Nine 200 H.P. CLARK Double Acting Engines and six 95 H.P. Super 2s in Gillespie & Moran plant at St. Louis, Okla.

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